

**AGENDA
REGULAR DRAINAGE MEETING
JANUARY 2, 2019
8:15 AM**

1. Open Meeting
2. Approve Agenda
3. Approve Minutes
December 19, 2018 Regular Drainage Meeting

Documents:

[12_19_2018 - DRAINAGE MINUTES.PDF](#)

4. Approve Claims For Payment
Pay Date of Friday, January 4, 2019

Documents:

[PAYABLES-DRAINAGE PUBLICATION.PDF](#)

5. DD 34 - Discuss, With Possible Action, Updates To Work Order #212 And Invoice For Repair Work

Documents:

[DD 34 WO 212 ROBERT LEE LETTER AND INVOICE.PDF](#)
[DD 34 WO 212 DETAIL 1-2 MTG.PDF](#)
[DD 34 WO 212 ENG EMAIL RE ROBERT LEE INVOICE.PDF](#)

6. DD 52 - Approve Petition To Expand Right Of Way
7. DD 131 - Approve Reclassification Reports And Set Hearing Date

Documents:

[DD 131 LATERALS CLASSIFICATION COMMISSION REPORT.PDF](#)
[DD 131 MAIN RECLASSIFICATION COMMISSION REPORT.PDF](#)

8. DD 148 - Discuss, With Possible Action, Landowner Letter

Documents:

[DD 148 SMITH LETTER 12-26-18.PDF](#)

9. DD 167 - Approve Engineer's Report On Repairs Or Improvements And Set Hearing Date

Documents:

[DD 167 ENG RPT 12-28-2018.PDF](#)

10. Discuss, With Possible Action, Drainage Clerk Agreement
11. Other Business
12. Adjourn Meeting

REGULAR DRAINAGE MEETING

12/19/2018 - Minutes

1. Open Meeting

Hardin County Board of Supervisor Chairman, BJ Hoffman, opened the meeting. Also present were Supervisors, Lance Granzow and Renee McClellan; Jim LaPlant, Matt Mahler, Todd Rozendaal, Dan McGinnis, Ray Spangenburg and Ryan Engel with Iowa Rural Utilities Association (IRUA); Lee Gallentine with Clapsaddle-Garber Associates (CGA); Drainage Clerk, Tina Schlemme.

2. Approve Agenda

Granzow moved, McClellan seconded to approve the agenda as presented. All ayes. Motion carried.

3. Approve Minutes

Granzow moved, McClellan seconded to approve the minutes of the December 12, 2018 regular drainage meeting and the December 12, 2018 completion hearing for DD 55-3 Lat 9, 9A and 9C. All ayes. Motion carried.

4. Discuss, With Possible Action, Iowa Regional Utilities Association Utility Permit Process

Granzow explained why the county began the drainage utility permit policy due to landowners that were concerned. LaPlant explained the history of IRUA as being a non profit company that began in the 1970s. He stated the construction crew are IRUA employees who do not receive bonuses, so they have no incentive to do a poor job. Much discussion took place regarding their concerns with the process but ultimately they did not like having to spend the extra money and time locating the tiles and then turning around and paying CGA for their services. IRUA discussed how the process is in Story County and how they like to work with the landowners and county for the best end result. They suggested Hardin County be involved with One Call as a non utility so notifications can be received. Hoffman stated he would like to get a committee formed with all utility companies to brainstorm how to make the policy better. LaPlant summarized the actions moving forward as 1) they will submit a variance to the drainage clerk for the areas that were not exposed, 2) put signs in place, 3) send GPS coordinates to the county, and 4) pay CGA for all outstanding invoices, including those to yet be invoiced for time up to this point.

5. Discuss, With Possible Action, Williams Excavation Rates

Schlemme presented Williams Excavation Rates as \$350/hour that will include labor and machinery. Parts and rock hauled will be billed by actual amounts. The Trustees acknowledged receipt of the rates and agreed no action was necessary.

6. DD 34 - Discuss, With Possible Action, Updates Regarding Work Order #212

Gallentine updated the Trustees that Adam Seward was out to look at the work order and believed the repair may have already been done. He tried contacting the landowner/requestor, Robert Lee, but was unsuccessful. The Trustees agreed that Schlemme should try contacting Mr. Lee and if no contact can be made, then the work order will remain open until an update is received from the landowner. Gallentine stated he would call Adam Seward with the update.

7. H-S 35-1 - Approve Work Order Request #240

Schlemme updated the Trustees that she shared the engineer's summary with the Story County Drainage Clerk and invited their Trustees to the meeting for discussion of the new work order. Their drainage clerk responded that it appeared to be a typical repair and their policy is to let the engineer take care of them unless the costs are expected to approach \$20,000. Gallentine added that it does appear to be a small repair and shouldn't exceed that amount. Granzow moved, McClellan seconded to approve Work Order #240 and for CGA to hire a contractor to repair based on the lottery system. All ayes. Motion carried.

8. Other Business

DD 143 - Schlemme updated the Trustees that City of Radcliffe Mayor, Taylor Roll, was okay with the date discussed at last week's meeting. Granzow moved, McClellan seconded to set the date for a landowner's meeting at the American Legion in Radcliffe for Tuesday, February 12, 2019 at 5:30 p.m. Gallentine added he will not be attendance but will be on call. All ayes. Motion carried.

DD 48 - Gallentine updated the Trustees that the outlet reported in Work Order #237 is a washed out surface drain. He recommends replacing the drain, installing a water stop, and cleaning out the silt that has drained into the ditch. He added the repair should not exceed \$10,000. Granzow moved, McClellan seconded for CGA to hire a contractor based on the lottery system. All ayes. Motion carried.

DD 86 - Gallentine updated the Trustees that the tile repair requested in Work Order #236 is a 15" collapsed tile with 2.5' cover and trees in the vicinity by the lake. He added that the estimated cost should be between \$5,000 to \$10,000. McClellan moved, Granzow seconded for CGA to hire a contractor to repair the tile and cut down the trees around the lake via the lottery system. All ayes. Motion carried.

DD 167 - Gallentine updated the Trustees that the water is bubbling out of the tile and onto the ground, but does drain back into the tile. Their opinion is the water is still flowing and just a small portion of the area is washing out. The Trustees agreed to wait until the engineer's report is filed before taking any action.

9. Adjourn Meeting

McClellan moved, Granzow seconded to adjourn the meeting. All ayes. Motion carried.



Hardin County

Drainage Claims with Pay Date of 1/4/2019

| Description | Vendor | Amount |
|--|--------------------------|-----------|
| DD 55-3 LAT 9C FINAL PAY EST | Hands On Excavating LLC. | 4,994.00 |
| DD 55-3 LAT 9A FINAL PAY EST | Hands On Excavating LLC. | 5,600.44 |
| DD 14 WO 170 ADDL BLOWOUT REPAIR | Williams Excavation LLC | 2,616.80 |
| DD 55-3 LAT 9A WO 224 INVESTIGATION TO 12/13 | Clapsaddle-Garber Assoc | 1,005.35 |
| DD 124 WO 225 LANDOWNERS MTG, ENG SVCS TO 12/13 | Clapsaddle-Garber Assoc | 163.00 |
| DD 143 WO 167 ENG SVCS FOR COMPL HRG 11/23-12/7 | Clapsaddle-Garber Assoc | 679.75 |
| DD 55-3 LAT 9A WO 113 DMG CLAIM 2017 CORN (1/2) | Perry Ritland | 968.70 |
| DD 55-3 LAT 9A WO 113 DMG CLAIM (1/2) | Chad Ritland | 968.69 |
| DD 55-3 LAT 9 WO 113 POSTAGE | Hardin County Auditor | 224.20 |
| DD 55-3 LAT 9A COMPL HRG ENG SVCS 10/26-12/28 | Clapsaddle-Garber Assoc | 146.00 |
| DD 55-3 LAT 9 COMPL HRG ENG SVCS 10/26-12/28 | Clapsaddle-Garber Assoc | 256.00 |
| DD 1 RD CROSSING D35 ENG SVCS TO 12/21 | Clapsaddle-Garber Assoc | 2,373.45 |
| DD 25 WO 226 REPAIR | Williams Excavation LLC | 8,513.86 |
| DD 34 WO 212 BLOWOUT ENG SVCS 8/3-12/28 | Clapsaddle-Garber Assoc | 289.00 |
| DD 34 OPEN DITCH CURTAIN WALL ENG SVCS 11/23-12/28 | Clapsaddle-Garber Assoc | 320.20 |
| DD 41 WO 194 INVESTIGATION 6/1-12/13 | Clapsaddle-Garber Assoc | 930.30 |
| DD 52 LEGAL OPINION/PETITION RE TREES | The Davis Brown Law Firm | 397.00 |
| DD 148 WO 211 INVESTIGATION 9/14-12/13 | Clapsaddle-Garber Assoc | 1,166.45 |
| DD 148 WO 227 BLOWOUT ENG SVCS TO 12/21 | Clapsaddle-Garber Assoc | 2,545.40 |
| DD 55-3 LAT 9 FINAL PAY EST | Hands On Excavating LLC. | 24,118.76 |
| DD 55-3 LAT 9 DMGS 2017 CORN; 2018 BEANS | Curt Bunte | 4,892.47 |

Total Regular Payables: 19,996.38
Total Stamped Warrants: 43,173.44

FILED

DEC 31 2018

HARDIN COUNTY AUDITOR

December 31, 2018

Hardin County Board of Supervisors
Eldora Iowa

On May 26, 2018, I contacted Hardin County of an open tile.

This Fall the hole was 3 times as big as what it was when I called it in in May. No one from the county ever showed up over the summer or fall to repair. I had Sheldahl Farms at my place doing other work for me, and since I had no contact from the county, we called 811 to flag the area, waited 2 days and I repaired it myself. I was tired of waiting for any response or contact from the county regarding fixing this tile. It was only getting worse over time.

Please reimburse me for the tile repair. Invoice is attached.

Robert Lee
13625 Co Hwy D65
Radcliffe IA 50230
515-291-3709

Sheldahl Farms, INC.

INVOICE

13827 250th St.
 Radcliffe, IA 50230
 515-899-7796
 515-689-2073

DATE:
 INVOICE #
 Customer ID
 Due Date

BILL TO

Robert Lee

| DESCRIPTION | QTY | AMOUNT |
|---|-----|-------------------|
| repair 8" tile in Concord Township see 20 east of hog buildings Aprx 200 Yards <i>pd</i> | | 115 ⁰⁰ |

OTHER COMMENTS

Subtotal \$ -
 Taxable \$ -
 Tax rate
 Tax due \$ -
 Other \$ -
TOTAL Due \$ 115.00

Make all checks payable to
 Sheldahl Farms, INC.

Thank You For Your Business!



Hardin County Drainage

Drainage Districts \DD 34 (51058)

WO00000212

Work Order Detail

Begin Date: 5/21/2018
Status: Open - Open
Description: DD 34 - Blowout just south of the center of section and north of windmill road. Has 2 rocks as marker. Corn planted.

Requested By: Robert Lee
Email:
Phone: (515) 291-3709
Landowner: Lee Farms
GIS #: 86-22-20-400-001
Sec-Twp-Rge: 20-86-22 S1/2

| Expenses: | | | | |
|---------------|-------------|-------------------------|--------------------------|-----------------|
| Date | ExpenseCode | Vendor | Description | Amount |
| 8/24/2018 | Engineering | Clapsaddle-Garber Assoc | DD 34 ENG SVCS TO 8/3/18 | \$197.05 |
| Total: | | | | \$197.05 |

| Contract/Estimate: | |
|--------------------|--------|
| Description | Amount |

Notes:

Note

BOS approve for CGA to investigate.

12/19/18-Gallentine updated the Trustees that Adam Seward was out to look at the work order and believed the repair may have already been done. He tried contacting the landowner/requestor, Robert Lee, but was unsuccessful. The Trustees agreed that Schlemme should try contacting Mr. Lee and if no contact can be made, then the work order will remain open until an update is received from the landowner. Gallentine stated he would call Adam Seward with the update.

12/19/18-Called Robert Lee who stated he was tired of waiting and had it fixed. The Sheldahl Brothers were fixing some private tile of his and he had them fix this as well. He will be submitting an invoice for reimbursement. I stated I was unsure if it would be okay due to them not being an approved contractor. He replied that he will no longer call in repairs but fix himself if they don't approve.

Emailed Lee & Trustees.

Agenda for 1/2/2019 reg drg mtg.

Tina Schlemme

From: Lee Gallentine <LGallentine@cgaconsultants.com>
Sent: Thursday, December 20, 2018 10:40 AM
To: Reneè L. McClellan; Tina Schlemme
Cc: Lance A. Granzow; BJ Hoffman
Subject: RE: WO 212

All,

This work order hadn't been assigned in the lottery system earlier because I was hoping to have Hall Backhoe do the repair when on-site doing other work orders. This was based on feedback from Robert Lee and Calvin Hyland at the last hearing (i.e. they didn't want to pay contractors to drive all the way across the county). However, it is my understanding that Hall has never submitted the requested paperwork even after repeated requests from Tina and myself. So, this work order was not assigned until recently when Mr. Seward joined the County Contractor Pool and it appeared winter weather is imminent.

My only other thought is that by allowing Robert Lee to use Sheldahl Brothers and having the District pay for it, the use of an uninsured contractor with no details provided of how the work was performed, GPS coordinates, or even verification that the repair was on district tile versus private tile is endorsed. However, the decision is obviously that of the District Trustees and not mine.

Please let me know if we should consider this work order closed and let Adam Seward know the same. Just let me know if you have any questions.

Thanks,

Lee O. Gallentine, PLS & PE
Vice President



Clapsaddle-Garber Associates, Inc. (CGA)
739 Park Avenue
Ackley, Iowa 50601

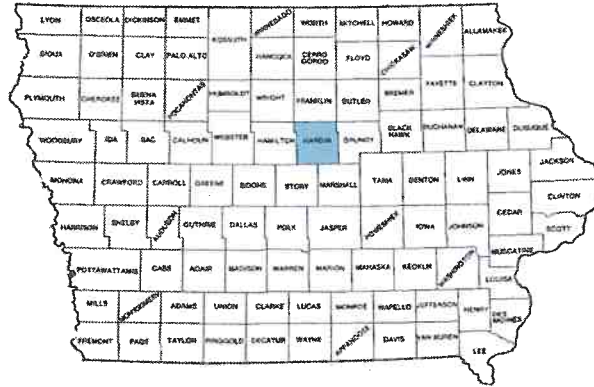
Office: 641-847-3273
Mobile: 515-689-5339
lgallentine@cgaconsultants.com
www.cgaconsultants.com

Ackley | Ames | Cedar Falls | Marshalltown | Webster City

[CLICK HERE to sign up for CGA news and updates!](#)



From: Reneè L. McClellan <RMcClellan@hardincountyia.gov>
Sent: Wednesday, December 19, 2018 4:03 PM
To: Tina Schlemme <TSchlemme@hardincountyia.gov>; Lee Gallentine <LGallentine@cgaconsultants.com>
Cc: Lance A. Granzow <LGranzow@hardincountyia.gov>; BJ Hoffman <BHoffman@hardincountyia.gov>
Subject: RE: WO 212



CLASSIFICATION COMMISSION REPORT FOR LATERALS DRAINAGE DISTRICT 131 HARDIN COUNTY, IOWA



CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS

16 East Main Street, PO Box 754 | Marshalltown, IA 50158
 1523 S. Bell Avenue, Suite 101 | Ames, IA 50010
 5106 Nordic Drive | Cedar Falls, IA 50613
 739 Park Avenue | Ackley, IA 50601
 511 Bank Street | Webster City, IA 50595

Project Office
 739 Park Avenue
 Ackley, IA. 50601
 Phone: 641-847-3273
 Fax: 641-847-2303

**Classification Commission Report
for Laterals
Drainage District 131
Hardin County, Iowa**

| | |
|---|----------|
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| • Lateral P3 | App. 3 |
| • Lateral P4 | App. 3 |

**Classification Commission Report
for Laterals
Drainage District 131
Hardin County, Iowa**

- 1.0 INTRODUCTION - The District Trustees appointed a Classification Commission to classify the lands within the drainage boundaries of the Drainage District 131 (Laterals). For reference, the Certificates of Oath of Commissioners are included in Appendix A. This action by the District Trustees was a result of the lack of separate classifications of said laterals along with the recent repairs to one of the laterals. This report will summarize the background information gathered and the evaluation process used by the Commissioners to classify said lands and present the resulting classifications.

2.0 BACKGROUND INFORMATION - In addition to reviewing lands within the drainage district, the Classification Commission also looked at the following supporting documents supplied by Clapsaddle Garber Associates:

- Existing Classification for Drainage District 131 from the Hardin County Drainage Clerk
- Soil Surveys from USDA website
- Maps of District Boundaries and Facilities from the Hardin County Drainage Clerk
- Aerial/Tract Maps from the Hardin County GIS website
- Recorded Boundary Surveys from the Hardin County Recorder's Office
- LIDAR elevation data.

Using the above information, the Classification Commission gathered the following background information:

- 2.1 Boundary Generation - This step involved generation of the Lateral boundaries. Using CADD, LIDAR elevation data, and Maps of District Boundaries, the watershed limits or boundaries were determined for the Laterals.
- 2.2 Tract Verification - This step involved verification that each tract number from the existing classification was within the Lateral boundaries and were appropriately sized (i.e. 40 acres or less according to recognized or legal divisions). In addition, it was verified that all lands within the mapped district boundaries had tract numbers. For those that weren't appropriately sized or did not have tract numbers, additional tract numbers were created.
- 2.3 Acreage Verification - This step involved verification of the acreages contained within the existing classification for Drainage District No. 131. For the tract numbers that previously had acreages stated and were totally contained within the mapped District No. 131 watershed, the acreage was compared to that available from the GIS websites or recorded boundary surveys and corrected as necessary.
- 2.4 Acreage Generation - This step involved generation of the acreages for all the remaining tract numbers (i.e. those without acreages previously stated in the existing classification, those created in the Tract Verification process above or those that were not totally contained within the watershed). For lands whose tract numbers were partially contained within the Lateral Boundaries, the acreage was measured from a composite overlay of the maps of Lateral Boundaries with the property lines from the GIS website. For reference, copies of said Boundary Maps are included in the appendices.
- 2.5 Soils Type Determination - This step involved differentiation of the soil types based on their properties (i.e. very poorly drained, poorly drained, and well drained), and the percentage of each within each tract number. This was measured from a composite overlay of the soil surveys with property lines from the GIS websites.
- 2.6 Proximity Determination - This step involved determination of the proximity or distance to the District facilities (i.e. Laterals). All distances were measured from the approximate centroid of each tract number along the shortest straight-line route to the Laterals. This was measured from a composite overlay of the maps of the Laterals with the property lines from the GIS websites.

3.0 EVALUATIONS - Using the above background information, the Classification Commission evaluated and determined benefits using the following method:

3.1 Soil Factor - This factor was calculated as an indication of the "need" for the District facilities based upon the natural soil characteristics for each tract number. It was the weighted total of the soil types after placing the following percentage values upon each soil type

- Very Poorly Drained = 85%
- Poorly Drained = 55%
- Well Drained = 10%

These percentages were based upon the Classification Commission's determination that the Well Drained soils typically needed very little of the District facilities to be productive, and the Poorly Drained and Very Poorly Drained soils typically relied heavily on the District facilities to be productive.

3.2 Facility Proximity Factor - This factor was calculated as an indication of "availability" of the District facilities (Laterals) based upon the distance each tract number was from said District facilities. Since there was a large range in the distances measured, this factor was necessary to compare the tract numbers relative to each other. Therefore, the tract number which had the farthest measured distance received a Facility Proximity Factor of 10 and the tract number which had the closest measured distance received a Facility Proximity Factor of 100. All other tract numbers received a Facility Proximity Factor calculated in proportion to this range based upon their measured distance.

3.3 Combined Factor - This factor was the composite of the above two factors (i.e. Soil Factor and Facility Proximity Factor). The Combined Factor was calculated as follows:

$$\text{Facility Proximity Factor} \times \text{Soil Factor}$$

Once the Combined Factor was determined, it was used as an indication of benefit received (i.e. the tract number with the highest Combined Factor was the closest to the District facilities and had the soils in most need of the District facilities).

3.4 % Benefit - This is the benefit each tract number receives using the Combined Factor based on a scale of 100 (i.e. the highest Combined Factor is 100 and all other Combined Factors are calculated in ratio to that).

3.5 Units Assessed - This combines the amount of benefit along with the land area that is benefitted. For each tract number, this is calculated as:

$$\% \text{ Benefit} \times \text{Number of Acres} \times 100$$

3.6 % Units Assessed - This is the percentage of units assessed for each tract number as a portion of the total units assessed for the entire District facility. Unlike the % Benefit which was a percentage comparing each tract number to the most benefitted tract number, the % Units Assessed compares each tract number to the total of the District facility.

- 3.7 Percent Levy - This is an indication of the levy amount necessary to pay for a project. For this report, it is at 100%, but will be adjusted as needed in the future by the Drainage Clerk to pay for future bills.
- 3.8 Assessment for Project (entire tract basis) - This is the amount that each tract number must pay in total to cover 100% of the levy. It is important to note that it has been calculated using a sample cost (varies depending upon the length of the District facility). For each tract number, this is calculated as:

$$\% \text{ Units Assessed} \times \text{Sample Cost}$$

- 3.9 Assessment for Project (per acre basis) - This is the amount that each tract number must pay per acre to cover 100% of the levy. Although this was not used in an active role by the Classification Commission, some landowners find it to be valuable information. It is important to note that it is calculated using the applicable sample cost. For each tract number, this is calculated:

$$\text{Assessment for Project (entire tract basis)} / \text{Number of Acres}$$

- 4.0 EXCEPTIONS: - With any process, there are inevitably exceptions and this classification was no different. While the above method was used for the majority of the tract numbers, the following are exceptions to the above process:

- 4.1 For tract numbers which are highly irregular in shape (i.e. long narrow pieces of land) or do not have accurate soil maps available, Proximity, Soil, and Surface Factors were not calculated. Instead, the average Combined Factor for all the other tract numbers was used. The only tract numbers to which this applies are roadways and are highlighted pink on the classification sheets contained in the appendices (i.e. tract number 37).

- 5.0 CONCLUSION: - Using all the above, the Classification Commission generated classification sheets for the Laterals. For reference, copies are included in the appendices. It is recommended moving forward that the District Trustees, should take action to accomplish the following:

- Approve the Classification Commission Report.
- Hold the required hearing.
- Adopt the Classification Commission Report as the basis for all current and future repairs and improvements.

CERTIFICATE

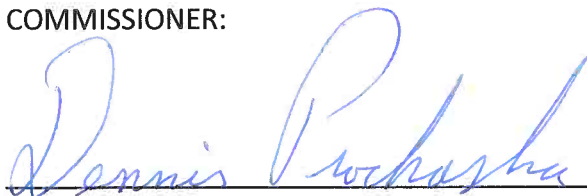
I, Dennis Prohaska, a resident freeholder of Hardin County, Iowa, hereby certify:

That I, along with the other classification commissioners for Hardin County Drainage District No. 131, have examined and inspected lands within the Drainage District, have reviewed original maps of the Drainage District, aerial maps of the lands within the Drainage District, and soil maps showing soil types for the lands within the Drainage District.

That I, along with the other classification commissioners for Hardin County Drainage District No. 131, completed the classification of the lands within the Drainage District relative to the Laterals. Said classification has fixed the percentages of benefits in tracts according to the recognized and legal divisions of 40 acres or less using a graduated scale of benefits, numbered according to the benefit to be received, with the lands receiving the greatest benefit marked on a scale of 100 and those benefited in a less degree marked with such percentage of one hundred as the benefit received is in proportion to.

That I, along with the other classification commissioners for Hardin County Drainage District No. 131, performed said classification in accordance with Chapter 468, Code of Iowa, to the best of my ability, skill, and judgment. The attached list is the final determination of classification and assessment for each tract of land in the Drainage District for all repairs and future improvements to the facilities in the Drainage District. That this report is a true and correct transcript of said classification of lands and apportionments of benefits made by said classification commission.

COMMISSIONER:

 Date: 12/26/18

Dennis Prohaska
22849 170th Street
Iowa Falls, IA 50126

CERTIFICATE

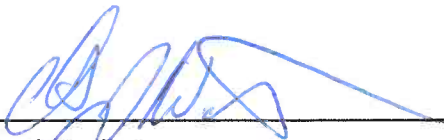
I, Chuck Walters, a resident freeholder of Hardin County, Iowa, hereby certify:

That I, along with the other classification commissioners for Hardin County Drainage District No. 131, have examined and inspected lands within the Drainage District, have reviewed original maps of the Drainage District, aerial maps of the lands within the Drainage District, and soil maps showing soil types for the lands within the Drainage District.

That I, along with the other classification commissioners for Hardin County Drainage District No. 131, completed the classification of the lands within the Drainage District relative to the Laterals. Said classification has fixed the percentages of benefits in tracts according to the recognized and legal divisions of 40 acres or less using a graduated scale of benefits, numbered according to the benefit to be received, with the lands receiving the greatest benefit marked on a scale of 100 and those benefited in a less degree marked with such percentage of one hundred as the benefit received is in proportion to.






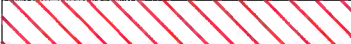
That I, along with the other classification commissioners for Hardin County Drainage District No. 131, performed said classification in accordance with Chapter 468, Code of Iowa, to the best of my ability, skill, and judgment. The attached list is the final determination of classification and assessment for each tract of land in the Drainage District for all repairs and future improvements to the facilities in the Drainage District. That this report is a true and correct transcript of said classification of lands and apportionments of benefits made by said classification commission.

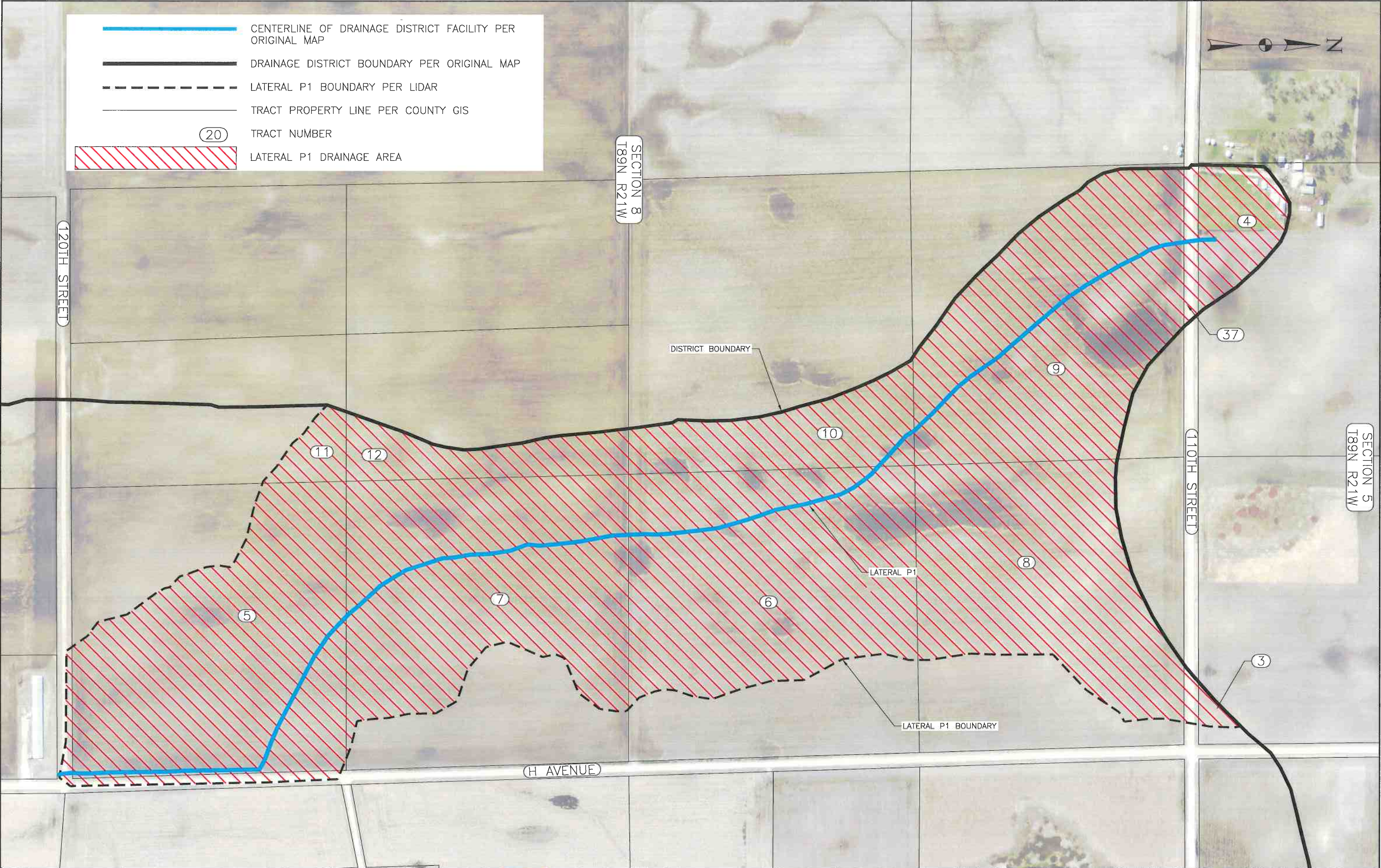
COMMISSIONER:



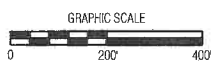
Date: 12-26-18

Chuck Walters
34122 230th Street
Eldora, IA 50627

 CENTERLINE OF DRAINAGE DISTRICT FACILITY PER ORIGINAL MAP
 DRAINAGE DISTRICT BOUNDARY PER ORIGINAL MAP
 LATERAL P1 BOUNDARY PER LIDAR
 TRACT PROPERTY LINE PER COUNTY GIS
 TRACT NUMBER
 LATERAL P1 DRAINAGE AREA



P:\0916\1\CADD\Quantities\AT P\0916_1\AT_1-BOUNDARY_MAP.png - CGA Plan - 12-27-18 - 12:51pm - ZJS948



| NO. | REVISION | BY | DATE | NO. | REVISION | BY | DATE |
|-----|----------|----|------|-----|----------|----|------|
| | | | | | | | |

 Clapsaddle-Garber Associates, Inc.
 Toll Free (800) 542-7881
 www.cgaconsultants.com

DESIGNED: JVS DATE: 10/10/2018
 DRAWN: JVS DATE: 10/10/2018
 CHECKED: ZJS DATE: 10/11/2018
 APPROVED: JGG DATE: ###

D.D. 131 CLASSIFICATION
 HARDIN COUNTY, IOWA

LATERAL P1 BOUNDARY MAP

PROJECT NO. 6916.1
 SHEET NO. 1

Lateral P1

| Tract | Taxing District | Parcel | | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|---|-------------|-----------------|---------------|-----------|----------------|------------------|-----------------|---|---|
| 3 | | 892105400004 | Cleveland, Darlene K - Trust | 5-89-21 | SE SE | 2.50 | 3.57% | 8.92 | 0.066% | 100 | \$16.55 | \$6.62 |
| 4 | | 892105400003 | Cleveland, Darlene K - Trust | 5-89-21 | SW SE | 10.00 | 100.00% | 1000.00 | 7.423% | 100 | \$1,855.63 | \$185.56 |
| 5 | | 892108400006 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | SE SE | 28.74 | 63.58% | 1827.16 | 13.562% | 100 | \$3,390.54 | \$117.97 |
| 6 | | 892108200004 | Disney, Marilyn J | 8-89-21 | SE NE | 28.31 | 88.65% | 2509.76 | 18.629% | 100 | \$4,657.20 | \$164.51 |
| 7 | | 892108400003 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | NE SE | 28.65 | 84.09% | 2409.15 | 17.882% | 100 | \$4,470.50 | \$156.04 |
| 8 | | 892108200002 | Disney, Marilyn J | 8-89-21 | NE NE | 25.30 | 47.91% | 1212.20 | 8.998% | 100 | \$2,249.40 | \$88.91 |
| 9 | | 892108200001 | Tripp, Norma J - 1/2 Stotts, Michelle L - 1/2 | 8-89-21 | NW NE | 30.00 | 93.83% | 2814.94 | 20.894% | 100 | \$5,223.51 | \$174.12 |
| 10 | | 892108200003 | Tripp, Norma J - 1/2 Stotts, Michelle L - 1/2 | 8-89-21 | SW NE | 13.00 | 82.22% | 1068.90 | 7.934% | 100 | \$1,983.49 | \$152.58 |
| 11 | | 892108400005 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | E1/2 SW SE | 1.77 | 18.40% | 32.57 | 0.242% | 100 | \$60.43 | \$34.14 |
| 12 | | 892108400002 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | E1/2 NW SE | 7.00 | 57.27% | 400.86 | 2.975% | 100 | \$743.85 | \$106.26 |
| 37 | | 12 | Alden Township Roads | | | 2.94 | 63.95% | 188.02 | 1.396% | 100 | \$348.89 | \$118.67 |
| | | | | | Averages | | | 1224.77 | | | | \$118.67 |
| | | | | | Totals | 178.21 | | | 100.00% | | \$25,000.00 | |











SECTION 5
T89N R21W

SECTION 8
T89N R21W

SECTION 9
T89N R21W

 CENTERLINE OF DRAINAGE DISTRICT FACILITY PER ORIGINAL MAP
 DRAINAGE DISTRICT BOUNDARY PER ORIGINAL MAP
 LATERAL P2 BOUNDARY PER LIDAR
 TRACT PROPERTY LINE PER COUNTY GIS
 LATERAL P2 DRAINAGE AREA
 TRACT NUMBER

120TH STREET

110TH STREET

H AVENUE

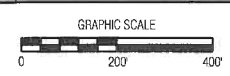
DISTRICT BOUNDARY

LATERAL P2

LATERAL P2 BOUNDARY



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D.D. 131 CLASSIFICATION
 HARDIN COUNTY, IOWA

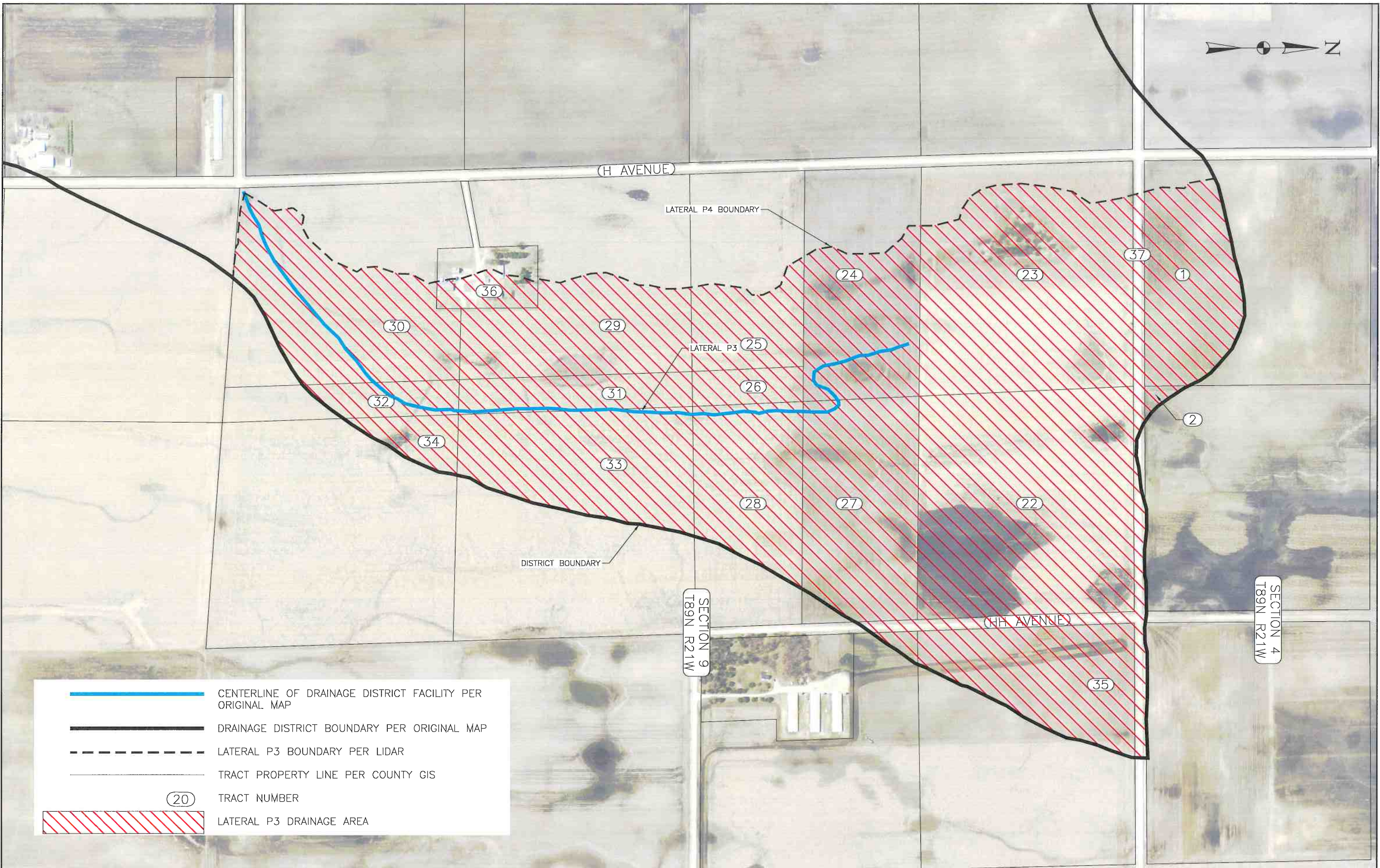
LATERAL P2 BOUNDARY MAP







PROJECT NO.
 6916.1
 SHEET NO.
 2

Lateral P2

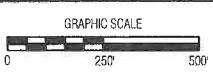
| Tract | Taxing District | Parcel | | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|--|-------------|--|--------------|-----------|----------------|------------------|-----------------|---|---|
| 1 | | 892104300003 | Jass, Lyle J Jass, Barbara A | 4-89-21 | SW SW | 1.33 | 37.06% | 49.29 | 1.175% | 100 | \$176.29 | \$132.55 |
| 3 | | 892105400004 | Cleveland, Darlene K - Trust | 5-89-21 | SE SE | 2.50 | 35.64% | 89.09 | 2.124% | 100 | \$318.61 | \$127.44 |
| 5 | | 892108400006 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | SE SE | 0.01 | 100.00% | 1.00 | 0.024% | 100 | \$3.58 | \$357.63 |
| 6 | | 892108200004 | Disney, Marilyn J | 8-89-21 | SE NE | 10.69 | 47.66% | 509.53 | 12.148% | 100 | \$1,822.22 | \$170.46 |
| 7 | | 892108400003 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust | 8-89-21 | NE SE | 10.35 | 36.83% | 381.14 | 9.087% | 100 | \$1,363.08 | \$131.70 |
| 8 | | 892108200002 | Disney, Marilyn J | 8-89-21 | NE NE | 9.7 | 33.36% | 323.56 | 7.714% | 100 | \$1,157.14 | \$119.29 |
| 23 | | 892109100001 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NW NW | 5.66 | 90.52% | 512.35 | 12.215% | 100 | \$1,832.29 | \$323.73 |
| 24 | | 892109100002 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SW NW | 6.69 | 57.52% | 384.78 | 9.174% | 100 | \$1,376.08 | \$205.69 |
| 25 | | 892109100003 | Broer, Timothy L | 9-89-21 | S1/2 SW NW EX E200' | 9.38 | 40.76% | 382.31 | 9.115% | 100 | \$1,367.27 | \$145.76 |
| 29 | | 892109300001 | Broer, Timothy L | 9-89-21 | NW SW EX TRACT & EX E200' | 14.75 | 38.11% | 562.12 | 13.402% | 100 | \$2,010.32 | \$136.29 |
| 30 | | 892109300003 | Broer, Timothy L | 9-89-21 | SW SW EX TRACT & EX E200' | 9.17 | 67.22% | 616.41 | 14.696% | 100 | \$2,204.47 | \$240.40 |
| 36 | | 892109300002 | Jass, David Jass, Darcie | 9-89-21 | COM W1/4 COR S1274' BEG E414; N332' E355' S581.2' W342.6' N206' W414' N45' POB | 2.59 | 6.60% | 17.10 | 0.408% | 100 | \$61.15 | \$23.61 |
| 37 | 12 | | Alden Township Roads | | | 7.42 | 49.27% | 365.60 | 8.717% | 100 | \$1,307.50 | \$176.21 |
| | | | | | Averages | | | 322.64 | | | | \$176.21 |
| | | | | | Totals | 90.24 | | | 100.000% | | \$15,000.00 | |





| | |
|---|---|
|  | CENTERLINE OF DRAINAGE DISTRICT FACILITY PER ORIGINAL MAP |
|  | DRAINAGE DISTRICT BOUNDARY PER ORIGINAL MAP |
|  | LATERAL P3 BOUNDARY PER LIDAR |
|  | TRACT PROPERTY LINE PER COUNTY GIS |
|  | TRACT NUMBER |
|  | LATERAL P3 DRAINAGE AREA |

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D.D. 131 CLASSIFICATION
HARDIN, IOWA

LATERAL P3 BOUNDARY MAP







PROJECT NO. 6916.1
SHEET NO. 3

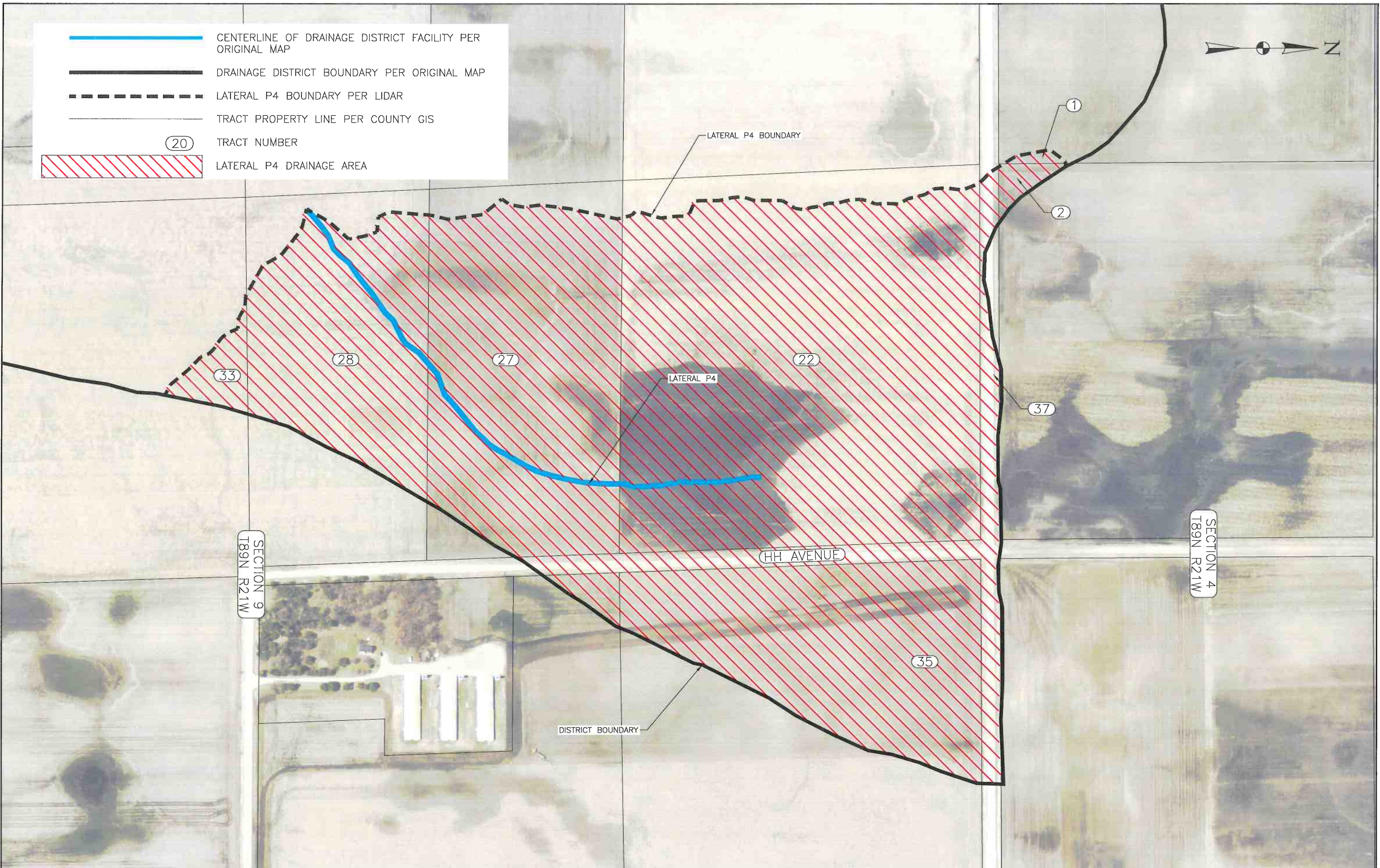
Lateral P3

| Tract | Taxing District | Parcel | | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|--|-------------|--|---------------|-----------|----------------|------------------|-----------------|---|---|
| 1 | | 892104300003 | Jass, Lyle J Jass, Barbara A | 4-89-21 | SW SW | 13.67 | 14.43% | 197.22 | 1.674% | 100 | \$418.46 | \$30.61 |
| 2 | | 892104300004 | Peterson, Dennis L Testamentary Trust | 4-89-21 | SE SW | 3.00 | 33.52% | 100.55 | 0.853% | 100 | \$213.34 | \$71.11 |
| 22 | | 892109100004 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NE NW | 38.00 | 43.79% | 1664.04 | 14.123% | 100 | \$3,530.73 | \$92.91 |
| 23 | | 892109100001 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NW NW | 32.34 | 62.34% | 2015.97 | 17.110% | 100 | \$4,277.46 | \$132.27 |
| 24 | | 892109100002 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SW NW | 13.01 | 90.66% | 1179.45 | 10.010% | 100 | \$2,502.55 | \$192.36 |
| 25 | | 892109100003 | Broer, Timothy L | 9-89-21 | S1/2 SW NW EX E200' | 7.08 | 57.84% | 409.51 | 3.476% | 100 | \$868.89 | \$122.72 |
| 26 | | 892109100007 | Broer Weis, Anna C | 9-89-21 | E200' S1/2 SW NW | 2.84 | 89.52% | 254.24 | 2.158% | 100 | \$539.45 | \$189.95 |
| 27 | | 892109100005 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SE NW | 12.47 | 71.26% | 888.67 | 7.542% | 100 | \$1,885.57 | \$151.21 |
| 28 | | 892109100006 | Broer Weis, Anna C | 9-89-21 | S1/2 SE NW | 8.53 | 48.26% | 411.67 | 3.494% | 100 | \$873.47 | \$102.40 |
| 29 | | 892109300001 | Broer, Timothy L | 9-89-21 | NW SW EX TRACT & EX E200' | 14.41 | 63.88% | 920.58 | 7.813% | 100 | \$1,953.27 | \$135.55 |
| 30 | | 892109300003 | Broer, Timothy L | 9-89-21 | SW SW EX TRACT & EX E200' | 16.59 | 87.16% | 1445.91 | 12.272% | 100 | \$3,067.92 | \$184.93 |
| 31 | | 892109300006 | Broer Weis, Anna C | 9-89-21 | E200' NW SW | 5.93 | 69.17% | 410.20 | 3.481% | 100 | \$870.35 | \$146.77 |
| 32 | | 892109300007 | Broer Weis, Anna C | 9-89-21 | E200' SW SW | 3.10 | 84.73% | 262.66 | 2.229% | 100 | \$557.31 | \$179.78 |
| 33 | | 892109300004 | Broer Weis, Anna C | 9-89-21 | NE SW | 12.00 | 47.54% | 570.42 | 4.841% | 100 | \$1,210.32 | \$100.86 |
| 34 | | 892109300005 | Broer Weis, Anna C | 9-89-21 | SE SW | 5.00 | 100.00% | 500.00 | 4.244% | 100 | \$1,060.89 | \$212.18 |
| 35 | | 892109200001 | Barhite, Steven C Barhite, Jo-Ann E | 9-89-21 | NW NE | 10.00 | 7.18% | 71.82 | 0.610% | 100 | \$152.38 | \$15.24 |
| 36 | | 892109300002 | Jass, David Jass, Darcie | 9-89-21 | COM W1/4 COR S1274' BEG E414; N332' E355' S581.2' W342.6' N206' W414' N45' POB | 2.46 | 28.36% | 69.76 | 0.592% | 100 | \$148.02 | \$60.17 |
| 37 | 12 | | Alden Township Roads | | | 6.97 | 58.80% | 409.85 | 3.478% | 100 | \$869.62 | \$124.77 |
| | | | | | Averages | | | 654.58 | | | | \$124.77 |
| | | | | | Totals | 207.40 | | | 100.000% | | \$25,000.00 | |

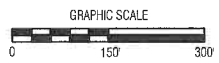




 CENTERLINE OF DRAINAGE DISTRICT FACILITY PER ORIGINAL MAP
 DRAINAGE DISTRICT BOUNDARY PER ORIGINAL MAP
 LATERAL P4 BOUNDARY PER LIDAR
 TRACT PROPERTY LINE PER COUNTY GIS
 TRACT NUMBER
 LATERAL P4 DRAINAGE AREA



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D.D. 131 CLASSIFICATION
 HARDIN COUNTY, IOWA

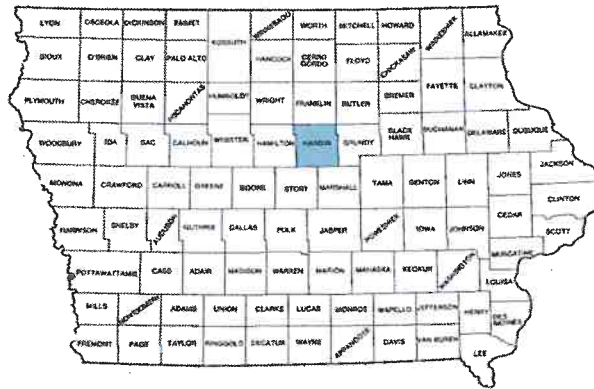
LATERAL P4 BOUNDARY MAP

PROJECT NO. 6916.1
 SHEET NO. 4

Lateral P4

| Tract | Taxing District | Parcel | | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|--|-------------|-----------------|--------------|-----------|----------------|------------------|-----------------|---|---|
| 1 | | 892104300003 | Jass, Lyle J Jass, Barbara A | 4-89-21 | SW SW | 0.15 | 10.49% | 1.57 | 0.030% | 100 | \$4.43 | \$29.51 |
| 2 | | 892104300004 | Peterson, Dennis L Testamentary Trust | 4-89-21 | SE SW | 3.00 | 19.20% | 57.61 | 1.080% | 100 | \$162.05 | \$54.02 |
| 22 | | 892109100004 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NE NW | 34.98 | 85.16% | 2978.95 | 55.863% | 100 | \$8,379.45 | \$239.55 |
| 27 | | 892109100005 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SE NW | 11.55 | 100.00% | 1155.00 | 21.659% | 100 | \$3,248.89 | \$281.29 |
| 28 | | 892109100006 | Broer Weis, Anna C | 9-89-21 | S1/2 SE NW | 7.21 | 54.55% | 393.32 | 7.376% | 100 | \$1,106.36 | \$153.45 |
| 33 | | 892109300004 | Broer Weis, Anna C | 9-89-21 | NE SW | 0.78 | 13.93% | 10.87 | 0.204% | 100 | \$30.57 | \$39.19 |
| 35 | | 892109200001 | Barhite, Steven C Barhite, Jo-Ann E | 9-89-21 | NW NE | 10.00 | 49.69% | 496.92 | 9.319% | 100 | \$1,397.80 | \$139.78 |
| 37 | 12 | | Alden Township Roads | | | 5.01 | 47.58% | 238.35 | 4.470% | 100 | \$670.46 | \$133.83 |
| | | | | | Averages | | | 666.57 | | | | \$133.83 |
| | | | | | Totals | 72.68 | | | 100.000% | | \$15,000.00 | |





RECLASSIFICATION COMMISSION REPORT FOR MAIN DRAINAGE DISTRICT 131 HARDIN COUNTY, IOWA



CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS

16 East Main Street, PO Box 754 | Marshalltown, IA 50158
 1523 S. Bell Avenue, Suite 101 | Ames, IA 50010
 5106 Nordic Drive | Cedar Falls, IA 50613
 739 Park Avenue | Ackley, IA 50601
 511 Bank Street | Webster City, IA 50595

Project Office
 739 Park Avenue
 Ackley, IA, 50601
 Phone: 641-847-3273
 Fax: 641-847-2303

**Reclassification Commission Report
For Main
Drainage District 131
Hardin County, Iowa**

| | |
|---|----------|
| Table of Contents | Pg. 1 |
| Report | |
| Introduction | Pg. 2 |
| Background Information | Pg. 3 |
| Evaluations | Pgs. 4-5 |
| Exceptions | Pg. 5 |
| Conclusion | Pg. 5 |
| Appendices | |
| Certificates of Oath of Commissioners | App. A |
| Main Boundary Map and Reclassification Sheets | App. B |

**Reclassification Commission Report
For Main
Drainage District 131
Hardin County, Iowa**

- 1.0 INTRODUCTION - The District Trustees appointed a Reclassification Commission to reclassify the lands within the drainage boundary of Drainage District 131. For reference, the Certificates of Oath of Commissioners are included in Appendix A. This action by the District Trustees was a result of concerns about the equity of the existing classification along with the recent repairs to one of the laterals. This report will summarize the background information gathered and the evaluation process used by the Commissioners to classify said lands and present the resulting reclassification.

2.0 BACKGROUND INFORMATION - In addition to reviewing lands within the District, the Reclassification Commission also looked at the following supporting documents supplied by Clapsaddle Garber Associates:

- Existing Classification for Drainage District 131 from the Hardin County Drainage Clerk
- Soil Surveys from USDA website
- Maps of District Boundaries and Facilities from the Hardin County Drainage Clerk
- Aerial/Tract Maps from the Hardin County GIS website
- Recorded Boundary Surveys from the Hardin County Recorder's Office

Using the above information, the Reclassification Commission gathered the following background information:

- 2.1 Tract Verification - This step involved verification that each tract number from the existing classification was within the District boundaries and were appropriately sized (i.e. 40 acres or less according to recognized or legal divisions). In addition, it was verified that all lands within the mapped district boundaries had tract numbers. For those that weren't appropriately sized or did not have tract numbers, additional tract numbers were created.
- 2.2 Acreage Verification - This step involved verification of the acreages contained within the existing classification for Drainage District No. 131. For the tract numbers that previously had acreages stated and were totally contained within the mapped District No. 131 watershed, the acreage was compared to that available from the GIS websites or recorded boundary surveys and corrected as necessary.
- 2.3 Acreage Generation - This step involved generation of the acreages for all the remaining tract numbers (i.e. those without acreages previously stated in the existing classification, those created in the Tract Verification process above or those that were not totally contained within the mapped District No. 131 watershed). For lands whose tract numbers were partially contained within the mapped District Boundaries, the acreage was measured from a composite overlay of the maps of District Boundaries with the linework from the GIS websites. For reference, a copy of Boundary Map is included in the appendix.
- 2.4 Soils Type Determination - This step involved differentiation of the soil types based on their properties (i.e. very poorly drained, poorly drained, well drained and excessively well drained), and the percentage of each within each tract number. This was measured from a composite overlay of the soil surveys with property lines from the GIS websites.
- 2.5 Proximity Determination - This step involved determination of the proximity or distance to the District facilities (i.e. Main). All distances were measured from the approximate centroid of each tract number along the shortest straight-line route to the Main. This was measured from a composite overlay of the maps of the Main with the property lines from the GIS websites.

3.0 EVALUATIONS - Using the above background information, the Reclassification Commission evaluated and determined benefits using the following method:

3.1 Soil Factor - This factor was calculated as an indication of the "need" for the District facilities based upon the natural soil characteristics for each tract number. It was the weighted total of the soil types after placing the following percentage values upon each soil type:

- Very Poorly Drained = 85%
- Poorly Drained = 55%
- Well Drained = 10%
- Excessively Well Drained = 0%

These percentages were based upon the Reclassification Commission's determination that the Excessively Well Drained soils typically do not need the District facilities to be productive, Well Drained soils typically needed very little of the District facilities to be productive, and the Poorly Drained and Very Poorly Drained soils typically relied heavily on the District facilities to be productive.

3.2 Facility Proximity Factor - This factor was calculated as an indication of "availability" of the District facilities (Main) based upon the distance each tract number was from said District facilities. Since there was a large range in the distances measured (i.e. 163± feet to 5,964± feet), this factor was necessary to compare the tract numbers relative to each other. Therefore, the tract number which had the farthest measured distance received a Facility Proximity Factor of 10 and the tract number which had the closest measured distance received a Facility Proximity Factor of 100. All other tract numbers received a Facility Proximity Factor calculated in proportion to this range based upon their measured distance.

3.3 Combined Factor - This factor was the composite of the above two factors (i.e. Soil Factor and Facility Proximity Factor). The Combined Factor was calculated as follows:

$$\text{Facility Proximity Factor} \times \text{Soil Factor}$$

Once the Combined Factor was determined, it was used as an indication of benefit received (i.e. the tract number with the highest Combined Factor was the closest to the District facilities and had the soils in most need of the District facilities).

3.4 % Benefit - This is the benefit each tract number receives using the Combined Factor based on a scale of 100 (i.e. the highest Combined Factor is 100 and all other Combined Factors are calculated in ratio to that).

3.5 Units Assessed - This combines the amount of benefit along with the land area that is benefitted. For each tract number, this is calculated as:

$$\% \text{ Benefit} \times \text{Number of Acres} \times 100$$

3.6 % Units Assessed - This is the percentage of units assessed for each tract number as a portion of the total units assessed for the entire District facility. Unlike the % Benefit which was a percentage comparing each tract number to the most benefitted tract number, the % Units Assessed compares each tract number to the total of the District facility.

3.7 Percent Levy - This is an indication of the levy amount necessary to pay for a project. For this report, it is at 100%, but will be adjusted as needed in the future by the Drainage Clerk to pay for future bills.

3.8 Assessment for Project (entire tract basis) - This is the amount that each tract number must pay in total to cover 100% of the levy. It is important to note that it has been calculated using a sample cost of \$50,000. For each tract number, this is calculated as:

$$\% \text{ Units Assessed} \times \$50,000$$

3.9 Assessment for Project (per acre basis) - This is the amount that each tract number must pay per acre to cover 100% of the levy. Although this was not used in an active role by the Reclassification Commission, some landowners find it to be valuable information. It is important to note that it is calculated using a sample cost of \$50,000. For each tract number, this is calculated:

$$\text{Assessment for Project (entire tract basis)} / \text{Number of Acres}$$

4.0 EXCEPTIONS: - With any process, there are inevitably exceptions and this reclassification was no different. While the above method was used for the majority of the tract numbers, the following are exceptions to the above process:

4.1 For tract numbers which are highly irregular in shape (i.e. long narrow pieces of land) or do not have accurate soil maps available, Proximity, Soil, and Surface Factors were not calculated. Instead, the average Combined Factor for all the other tract numbers was used. The only tract numbers to which this applies are roadways and are highlighted pink on the reclassification sheets contained in the appendix (i.e. tract number 37).

5.0 CONCLUSION: - Using all the above, the Reclassification Commission generated reclassification sheets for the entire drainage district. For reference, copies are included in the appendix. It is recommended moving forward that the District Trustees, should take action to accomplish the following:

- Approve the Reclassification Commission Report.
- Hold the required hearing.
- Adopt the Reclassification Commission Report as the basis for all current and future repairs and improvements.

CERTIFICATE



Lee Gallentine, a Professional Engineer of the State of Iowa, hereby certify:

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, have examined and inspected lands within the Drainage District, have reviewed original maps of the Drainage District, aerial maps of the lands within the Drainage District, and soil maps showing soil types for the lands within the Drainage District.

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, completed the reclassification of the lands within the Drainage District relative to the Main. Said reclassification has fixed the percentages of benefits in tracts according to the recognized and legal divisions of 40 acres or less using a graduated scale of benefits, numbered according to the benefit to be received, with the lands receiving the greatest benefit marked on a scale of 100 and those benefited in a less degree marked with such percentage of one hundred as the benefit received is in proportion to.

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, performed said reclassification in accordance with Chapter 468, Code of Iowa, to the best of my ability, skill, and judgment. The attached list is the final determination of reclassification and assessment for each tract of land in the Drainage District for all repairs and future improvements to the facilities in the Drainage District. That this report is a true and correct transcript of said reclassification of lands and apportionments of benefits made by said reclassification commission.

COMMISSIONER:

| | |
|---|---|
|  | I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. |
| |  PE Dec 26, 2018 Lee O. Gallentine, P.E. DATE: |
| | License Number: 15745 |
| | My License Renewal Date is December 31, 2018 Page or sheets covered by this seal: <i>As shown on Table of Contents</i> |

CERTIFICATE

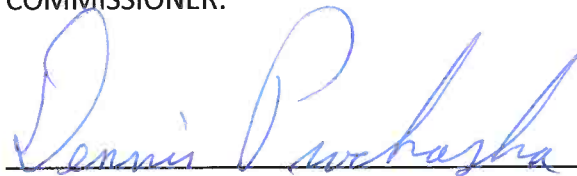
I, Dennis Prohaska, a resident freeholder of Hardin County, Iowa, hereby certify:

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, have examined and inspected lands within the Drainage District, have reviewed original maps of the Drainage District, aerial maps of the lands within the Drainage District, and soil maps showing soil types for the lands within the Drainage District.

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, completed the reclassification of the lands within the Drainage District relative to the Main. Said reclassification has fixed the percentages of benefits in tracts according to the recognized and legal divisions of 40 acres or less using a graduated scale of benefits, numbered according to the benefit to be received, with the lands receiving the greatest benefit marked on a scale of 100 and those benefited in a less degree marked with such percentage of one hundred as the benefit received is in proportion to.

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, performed said reclassification in accordance with Chapter 468, Code of Iowa, to the best of my ability, skill, and judgment. The attached list is the final determination of reclassification and assessment for each tract of land in the Drainage District for all repairs and future improvements to the facilities in the Drainage District. That this report is a true and correct transcript of said reclassification of lands and apportionments of benefits made by said reclassification commission.

COMMISSIONER:

 Date: 12/26/18

Dennis Prohaska
22849 170th Street
Iowa Falls, IA 50126

CERTIFICATE

I, Chuck Walters, a resident freeholder of Hardin County, Iowa, hereby certify:

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, have examined and inspected lands within the Drainage District, have reviewed original maps of the Drainage District, aerial maps of the lands within the Drainage District, and soil maps showing soil types for the lands within the Drainage District.

That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, completed the reclassification of the lands within the Drainage District relative to the Main. Said reclassification has fixed the percentages of benefits in tracts according to the recognized and legal divisions of 40 acres or less using a graduated scale of benefits, numbered according to the benefit to be received, with the lands receiving the greatest benefit marked on a scale of 100 and those benefited in a less degree marked with such percentage of one hundred as the benefit received is in proportion to.

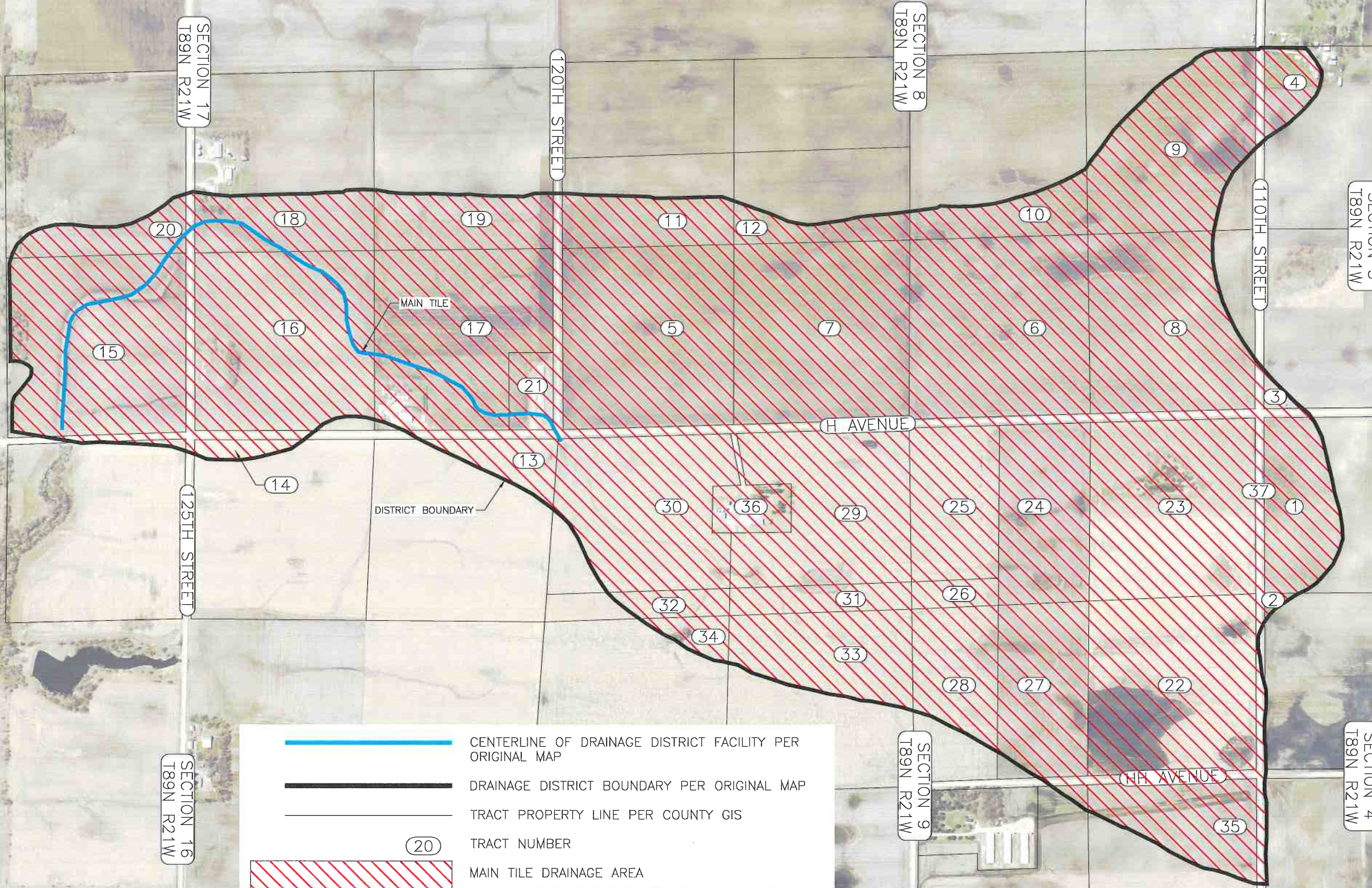
That I, along with the other reclassification commissioners for Hardin County Drainage District No. 131, performed said reclassification in accordance with Chapter 468, Code of Iowa, to the best of my ability, skill, and judgment. The attached list is the final determination of reclassification and assessment for each tract of land in the Drainage District for all repairs and future improvements to the facilities in the Drainage District. That this report is a true and correct transcript of said reclassification of lands and apportionments of benefits made by said reclassification commission.






COMMISSIONER:



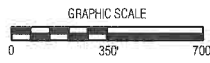
Date: 12-26-18

Chuck Walters
34122 230th Street
Eldora, IA 50627



| | |
|---|---|
|  | CENTERLINE OF DRAINAGE DISTRICT FACILITY PER ORIGINAL MAP |
|  | DRAINAGE DISTRICT BOUNDARY PER ORIGINAL MAP |
|  | TRACT PROPERTY LINE PER COUNTY GIS |
|  | TRACT NUMBER |
|  | MAIN TILE DRAINAGE AREA |

P:\0916\CADD\Quantities\0916_1-BOUNDARY_MAP.dwg - CGA Plan - 12-27-18 - 12:07pm - ZLS943



| NO. | REVISION | BY | DATE | NO. | REVISION | BY | DATE |
|-----|----------|----|------|-----|----------|----|------|
| | | | | | | | |



Clapsaddle-Garber Associates, Inc.
Toll Free (800) 542-7981
www.cgaconsultants.com

DESIGNED: JVS DATE: ###
DRAWN: JVS DATE: ###
CHECKED: ZLS DATE: ###
APPROVED: LOG DATE: ###

D.D. 131 RECLASSIFICATION
HARDIN COUNTY, IOWA

MAIN TILE BOUNDARY MAP

PROJECT NO. 6916.1
SHEET NO. 1

Main Tile

| Tract | Taxing District | Parcel | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|-------------|--|-------|-----------|----------------|------------------|-----------------|---|---|
| 1 | | 892104300003 | 4-89-21 | Jass, Lyle J Jass, Barbara A SW SW | 15.00 | 14.47% | 217.00 | 0.559% | 100 | \$279.52 | \$18.63 |
| 2 | | 892104300004 | 4-89-21 | Peterson, Dennis L Testamentary Trust SE SW | 3.00 | 25.34% | 76.03 | 0.196% | 100 | \$97.94 | \$32.65 |
| 3 | | 892105400004 | 5-89-21 | Cleveland, Darlene K - Trust SE SE | 5.00 | 12.34% | 61.71 | 0.159% | 100 | \$79.49 | \$15.90 |
| 4 | | 892105400003 | 5-89-21 | Cleveland, Darlene K - Trust SW SE | 10.00 | 14.22% | 142.16 | 0.366% | 100 | \$183.12 | \$18.31 |
| 5 | | 892108400006 | 8-89-21 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust SE SE | 38.00 | 88.75% | 3372.63 | 8.689% | 100 | \$4,344.38 | \$114.33 |
| 6 | | 892108200004 | 8-89-21 | Disney, Marilyn J SE NE | 39.00 | 67.27% | 2623.63 | 6.759% | 100 | \$3,379.56 | \$86.66 |
| 7 | | 892108400003 | 8-89-21 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust NE SE | 39.00 | 81.55% | 3180.55 | 8.194% | 100 | \$4,096.95 | \$105.05 |
| 8 | | 892108200002 | 8-89-21 | Disney, Marilyn J NE NE | 35 | 31.53% | 1103.66 | 2.843% | 100 | \$1,421.65 | \$40.62 |
| 9 | | 892108200001 | 8-89-21 | Tripp, Norma J - 1/2 Stotts, Michelle L - 1/2 NW NE | 30.00 | 29.62% | 888.65 | 2.289% | 100 | \$1,144.70 | \$38.16 |
| 10 | | 892108200003 | 8-89-21 | Tripp, Norma J - 1/2 Stotts, Michelle L - 1/2 SW NE | 13.00 | 59.95% | 779.34 | 2.008% | 100 | \$1,003.89 | \$77.22 |
| 11 | | 892108400005 | 8-89-21 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust E1/2 SW SE | 10.00 | 40.37% | 403.70 | 1.040% | 100 | \$520.02 | \$52.00 |
| 12 | | 892108400002 | 8-89-21 | Heinzeroth, Jeffrey Heinzeroth, Frances - Trust E1/2 NW SE | 7.00 | 63.53% | 444.73 | 1.146% | 100 | \$572.87 | \$81.84 |
| 13 | | 892116100001 | 16-89-21 | Hamilton, Robert T, Inc NW NW | 15.00 | 75.07% | 1125.98 | 2.901% | 100 | \$1,450.40 | \$96.69 |
| 14 | | 892116100003 | 16-89-21 | Hamilton, Robert T, Inc SW NW | 3.00 | 35.59% | 106.77 | 0.275% | 100 | \$137.53 | \$45.84 |
| 15 | | 892117400007 | 17-89-21 | Beasley Farms, Inc NE SE | 36.00 | 75.33% | 2711.74 | 6.986% | 100 | \$3,493.07 | \$97.03 |
| 16 | | 892117200005 | 17-89-21 | Beasley Farms, Inc SE NE | 38.00 | 72.55% | 2756.99 | 7.103% | 100 | \$3,551.35 | \$93.46 |
| 17 | | 892117200004 | 17-89-21 | Dunning, Thomas and Jane Trust NE NE EX PARCEL A | 34.85 | 85.80% | 2990.22 | 7.704% | 100 | \$3,851.78 | \$110.52 |
| 18 | | 892117200002 | 17-89-21 | Huebner, Gregory W SW NE | 15.00 | 44.81% | 672.20 | 1.732% | 100 | \$865.88 | \$57.73 |
| 19 | | 892117200001 | 17-89-21 | Dunning, Thomas and Jane Trust NW NE | 13.00 | 49.44% | 642.71 | 1.656% | 100 | \$827.89 | \$63.68 |
| 20 | | 892117400001 | 17-89-21 | Martin Marietta Aggregates, Inc NW SE | 3.00 | 54.68% | 164.03 | 0.423% | 100 | \$211.29 | \$70.43 |
| 21 | | 892117200003 | 17-89-21 | Dunning, Thomas and Jane Trust PARCEL A IN NE NE (BEG NE COR S363' W600'N363'E600' POB) | 4.15 | 73.82% | 306.34 | 0.789% | 100 | \$394.60 | \$95.08 |



Main Tile

| Tract | Taxing District | Parcel | | Sec-Twp-Rng | Legal | Acres | % Benefit | Units Assessed | % Units Assessed | Percent of Levy | Assessment for Project (entire tract basis) | Assessment for Project (per acre basis) |
|-------|-----------------|--------------|--|-------------|---|---------------|-----------|----------------|------------------|-----------------|---|---|
| 22 | | 892109100004 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NE NW | 38.00 | 31.88% | 1211.50 | 3.121% | 100 | \$1,560.57 | \$41.07 |
| 23 | | 892109100001 | Fox Family Living Trust - 1/2 Biggs Family Trust - 1/2 | 9-89-21 | NW NW | 38.00 | 37.21% | 1413.83 | 3.642% | 100 | \$1,821.19 | \$47.93 |
| 24 | | 892109100002 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SW NW | 19.70 | 54.17% | 1067.17 | 2.749% | 100 | \$1,374.65 | \$69.78 |
| 25 | | 892109100003 | Broer, Timothy L | 9-89-21 | S1/2 SW NW EX E200' | 16.46 | 54.20% | 892.19 | 2.299% | 100 | \$1,149.26 | \$69.82 |
| 26 | | 892109100007 | Broer Weis, Anna C | 9-89-21 | E200' S1/2 SW NW | 2.84 | 64.35% | 182.76 | 0.471% | 100 | \$235.41 | \$82.89 |
| 27 | | 892109100005 | Duncan, Royle H Duncan, Jo A | 9-89-21 | N1/2 SE NW | 12.47 | 49.97% | 623.13 | 1.605% | 100 | \$802.67 | \$64.37 |
| 28 | | 892109100006 | Broer Weis, Anna C | 9-89-21 | S1/2 SE NW | 8.53 | 37.02% | 315.80 | 0.814% | 100 | \$406.79 | \$47.69 |
| 29 | | 892109300001 | Broer, Timothy L | 9-89-21 | NW SW EX TRACT & EX E200' | 29.16 | 78.13% | 2278.22 | 5.869% | 100 | \$2,934.64 | \$100.64 |
| 30 | | 892109300003 | Broer, Timothy L | 9-89-21 | SW SW EX TRACT & EX E200' | 25.76 | 100.00% | 2576.00 | 6.636% | 100 | \$3,318.21 | \$128.81 |
| 31 | | 892109300006 | Broer Weis, Anna C | 9-89-21 | E200' NW SW | 5.93 | 60.75% | 360.24 | 0.928% | 100 | \$464.04 | \$78.25 |
| 32 | | 892109300007 | Broer Weis, Anna C | 9-89-21 | E200' SW SW | 3.10 | 85.66% | 265.55 | 0.684% | 100 | \$342.06 | \$110.34 |
| 33 | | 892109300004 | Broer Weis, Anna C | 9-89-21 | NE SW | 12.00 | 43.43% | 521.17 | 1.343% | 100 | \$671.33 | \$55.94 |
| 34 | | 892109300005 | Broer Weis, Anna C | 9-89-21 | SE SW | 5.00 | 99.80% | 499.01 | 1.286% | 100 | \$642.78 | \$128.56 |
| 35 | | 892109200001 | Barhite, Steven C Barhite, Jo-Ann E | 9-89-21 | NW NE | 10.00 | 17.43% | 174.27 | 0.449% | 100 | \$224.48 | \$22.45 |
| 36 | | 892109300002 | Jass, David Jass, Darcie | 9-89-21 | COM W1/4 COR S1274' BEG E414; N332' E355 ' S581.2' W342.6' N206' W414' N45' POB | 5.05 | 49.37% | 249.34 | 0.642% | 100 | \$321.18 | \$63.60 |
| 37 | 12 | | Alden Township Roads | | | 26.00 | 54.43% | 1415.13 | 3.646% | 100 | \$1,822.86 | \$70.11 |
| | | | | | Averages | | | 1049.08 | | | | \$70.11 |
| | | | | | Totals | 664.00 | | | 100.0% | | \$50,000.00 | |



Date 12/20/2018

To Hardin County Supervisors

I am writing you in reference to the letter I received concerning dd148. After receiving said letter I went to the auditors office and picked up a copy of the engineers report. My neighbors and I have issues with the cost!

Granted that the ditch needs cleaned out but it looks to us like the engineering firm is reporting itself right into a job that could be done a lot cheaper without their over \$50,000 oversight.

I have been farming this farm for over 40 years and was here when they cleaned it the last time. Many of the repairs that the engineer has specified are not needed. I therefore submit that their report should not be accepted!

I will be at the meeting in January to protest in person since I called the supervisors office and failed to receive a return call.

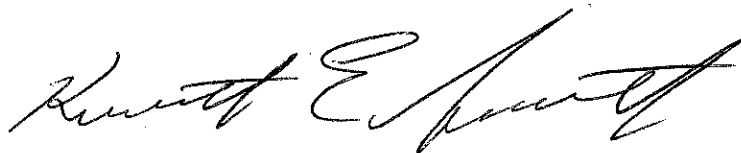
Kenneth E. Smith

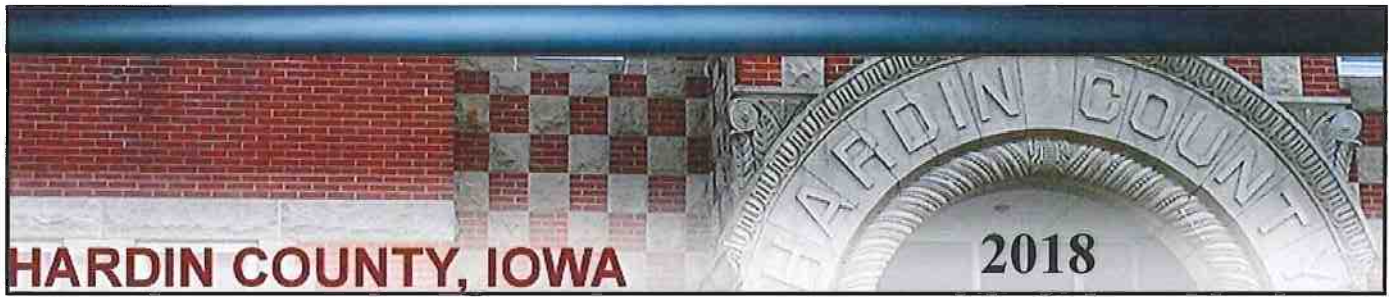
31524 110th street

Ackley, IA 50601


641-847-2782


Sincerely:





**ENGINEER'S REPORT
ON REPAIRS OR
IMPROVEMENTS TO
MAIN TILES
DRAINAGE DISTRICT
NO. 167
HARDIN COUNTY,
IOWA**

| | |
|---|---|
|  | <p>I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA</p> <p><i>Lee O. Gallentine</i> PE DATE <i>Dec 28, 2018</i></p> <p>LEE O. GALLETINE, P.E.</p> <p>LICENSE NUMBER: 15745 MY LICENSE RENEWAL DATE IS DECEMBER 31, 2018 PAGES OR SHEETS COVERED BY THIS SEAL: SHOWN ON TABLE OF CONTENTS</p> |
|---|---|

| | | |
|---|---|--|
|  | <p>CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS</p> <p>16 East Main Street, PO Box 754 Marshalltown, IA 50158 1523 S. Bell Avenue, Suite 101 Ames, IA 50010 5106 Nordic Drive Cedar Falls, IA 50613 739 Park Avenue Ackley, IA 50601 511 Bank Street Webster City, IA 50595</p> | <p>Project Office 739 Park Avenue Ackley, IA. 50601 Phone: 641-847-3273 Fax: 641-847-2303</p> |
|---|---|--|

Engineer's Report on Repairs or Improvements to Main Tiles, Drainage District No. 167 Hardin County, Iowa

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Engineer's Report on Repairs or Improvements to Main Tiles, Drainage District No. 167 Hardin County, Iowa

1.0 INTRODUCTION

- SCOPE OF WORK – The Hardin County Board of Supervisors, acting as District Trustees, requested Clapsaddle-Garber Associates to investigate and report concerning repairs or improvements to the Main tiles of Drainage District No. 167. This report will summarize the history of repairs, investigate the necessity and feasibility of said repairs or improvements, and present opinions of probable construction costs associated with said repairs or improvements. At the Landowner's Meeting held on July 25, 2018, the investigation summary for Work Order #208 was discussed and reviewed by the District Trustees. For reference, a copy of the meeting minutes is included in Appendix G and a copy of the Investigation Summary for Work Order #208 is included in Appendix H. As a result of this meeting, the District Trustees requested Clapsaddle-Garber Associates to move ahead with an investigation and report concerning repairs or improvements to the Main tiles.

- LOCATION – The area of investigation was limited to the lower end of the North and South Main tiles. Said Main tiles are located in Sections 3 and 4, Township 86 North (T86N), Range 20 West (R20W), Hardin County, Iowa. Specifically, the downstream limit of investigation for both Main tiles is at their outlets at a channel just west of the midsection line of Section 4 at approximately ¼ mile north of County Highway D55. Going upstream, the tiles then proceed east, northeast, and southeast and enters Section 3 at approximately ¼ mile north of County Highway D55. The tiles then proceed southeast into the town of New Providence with the upstream limits of investigation being a few hundred feet west of the intersection of North Main Street and Chestnut Street. For reference, a map showing the limits of investigation is included in Appendix I.

2.0 DISTRICT HISTORY – The following is a summary of the pertinent history of Drainage District No. 167 as obtained from the Hardin County Engineer’s Field Books and the Hardin County Auditor’s drainage minutes and records.

- 1947 – 1948 County Engineer’s Field Book 766 contains field notes for design and construction of the district facilities.
- 1949, Feb 20 Date of district map and profiles.
- 1954, Sept 27 Agreement between landowners for establishment. Said agreement called for the outlet of said tile be near the SW Corner NW¼ SE¼ of Section 4 T86N R20W. It then proceeded in a northeasterly direction along the line of natural drainage to the west line of the NE¼ SE¼ Section 4. From there, it continued in an easterly direction extending to a point to the east side of Main Street at the NW Corner of Lot 4 Block 2. It then continued to Orange Street at the south end of Lots 7 and 8 Block 3. The tiles were to consist of 6,780 feet of 8 inch tile and 1,600 feet of 6 inch tile.
- 1961, Apr Repair work completed by secondary road fund.
- 1966, Apr 19 Lots 5 and 6 Block 2 permitted to drain into district tile and be added to said district.
- 1973, Jan 24 Edrich Addition of New Providence granted temporary permit to outlet septic tank into district tile.
- 1977, Dec 30 Request for repair to broken tile in E½ SE¼ Section 4.
- 1999, Mar 3 Repair approved in Section 4.
- 2004, May 5 Repairs approved in Section 4.
- 2007, Apr 4 Investigation of problems with drainage issues approved.
- 2009, Apr 8 Repairs approved.
- 2009 Apr 29 Repairs approved in SE¼ Section 4.
- 2009, May 20 Repairs approved in SE¼ Section 4.
- 2009, Nov 25 Repairs approved in Section 4.
- 2011, June 29 Payment for repair approved.

- 3.0 INVESTIGATION – All field investigation for this report was performed as part of the Investigation Summary for Work Order #208. Said investigation was limited to visual observation (without excavation) and survey data gathered during said investigation. For reference, a copy of the Investigation Summary is included in Appendix H.

A review of district history shows that 7 repairs have been completed over the last 20 years. These repairs have consisted of tile replacement in lengths up to 40 feet and repairs of multiple blowouts/sinkholes. It should be noted that in some cases, lack of ground cover was mentioned as the cause of the tile failure.

All other investigations were limited to office and records research as mentioned. Calculations were performed to determine the drainage coefficient for the length of the existing Main tiles. It appears that for their respective watersheds, the North Main tile was designed to provide a drainage coefficient of 0.27 to 4.51 inches per day and the South Main tile was designed to provide a drainage coefficient of 0.58 to 5.26 inches per day.

- 4.0 DISCUSSION AND CONCLUSIONS – Based on the above, it is obvious that the Main tiles have a history of failure that is attributable to a lack of ground cover. Since the original profiles for the Main tiles show installation depths of approximately 3 feet to 4 feet, either the lack of ground cover is due to design changes during construction or soil erosion since the original installation.

Regardless of the cause of the lack of ground cover, if repairs or improvements are not performed the Main tiles will continue to deteriorate and collapse. This will allow soil to enter the Main tiles, which will manifest itself as more sinkholes and plugged tile. When all these issues are combined, it will lead to further reduced drainage and liability exposure by the drainage district.

5.0 REPAIR METHODS – To repair the existing Main tiles, the following options are the most straightforward available:

Dual Tile Replacement

- For the downstream stretches of the North and South Main tiles, remove and replace the existing tiles with two new tiles of equal or comparable size. For reference, a chart with the required tile sizes and capacities is included in Appendix K.
- Typically, the replacement Main tiles would be in the same location as the existing Main tiles in order to locate and reconnect private tile and lateral connections. However, due to lack of soil cover, it is recommended to shift each of the Main tiles from their current locations to gain additional soil cover. For reference, the general route is shown on the map included in Appendix J.

Single Tile Replacement

- For the downstream stretches of the North and South Main tiles, remove and replace the existing tiles with a single new tile of equal or comparable capacity. For reference, a chart with the required tile sizes and capacities is included in Appendix L.
- Typically, the replacement Main tile would be in the same location as the existing Main tiles in order to locate and reconnect private tile and lateral connections. However, due to lack of soil cover and the larger size of a single tile, it is recommended to shift the single Main tile from the current locations to gain additional soil cover. For reference, the general route is shown on the map included in Appendix J.

With the above-mentioned repair methods, the following should be noted:

- Due to the soil types and soil cover, all replacement tile will have rock bedding for additional stability and strength.
- The Main tiles would be shifted from their existing locations to gain soil cover.
- The only tiles being repaired are the tile identified in Appendix J. The remainder of the tile is not being repaired or modified in any manner.
- The proposed pipe sizes shown in Appendices K and L are those that are currently manufactured that meet or exceed the existing capacity.
- The proposed and existing capacities shown in Appendices K and L are based on the assumptions that the Main tiles are both installed per their respective design and that they are functioning at full capacity (i.e. are not collapsed, broken, plugged, etc).
- The proposed and existing pipe sizes and capacities shown in Appendices K and L are those to serve the lands within the existing District boundaries and not any discharges from other lands outside the District boundaries.
- The stationing and distances shown in Appendices K and L are based on the original district profiles. There are additional lengths of tile downstream that will also be repaired.
- Repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS office to verify the existence of said jurisdictional wetlands and that there will be no impact on them.

Per Iowa Code Chapter 468.126, any of the above actions that do not increase capacity would be considered a repair. As such, Subsection 1, paragraph c of Chapter 468.126 states "If the estimated cost of the repair does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing. . ." The opinion of probable construction cost contained in the next section of this report

exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

6.0 IMPROVEMENT METHODS – To improve the drainage capacity for the existing Main tiles, the following options are the most straightforward available:

Dual Tile Upsizing

- For the downstream stretches of the North and South Main tiles, remove and replace the existing tiles with two new tiles of an equal or larger size. For reference, a chart with the required tile sizes and capacities is included in Appendix N.
- Typically, the replacement Main tiles would be in the same location as the existing Main tiles in order to locate and reconnect private tile and lateral connections. However, due to lack of soil cover and the larger size of a single tile, it is recommended to shift each of the Main tiles from their current locations or install them at a flatter grade to gain additional soil cover. For reference, the general route is shown on the map included in Appendix M.

Single Tile Upsizing

- For the downstream stretches of the North and South Main tiles, remove and replace the existing tiles with a single new tile of equal or greater capacity. For reference, a chart with the required tile sizes and capacities is included in Appendix O.
- Typically, the replacement Main tile would be in the same location as the existing Main tiles in order to locate and reconnect private tile and lateral connections. However, due to lack of soil cover and the larger size of a single tile, it is recommended to shift the single Main tile from the current locations or install it at a flatter grade to gain additional soil cover. For reference, the general route is shown on the map included in Appendix M.

With the above-mentioned improvement method, the following should be noted:

- Due to the soil types and soil cover, all replacement tile will have rock bedding for additional stability and strength.
- The Main tiles would be shifted from their existing locations or installed at a flatter grade to gain soil cover.
- The only tiles being improved are the tiles identified in Appendix M. The remainder of the tiles are not being repaired or modified in any manner.
- The proposed pipe sizes shown in Appendices N and O are those that are currently manufactured that meet or exceed the ½” or 1” drainage coefficient or match the existing pipe capacity.
- The proposed and existing capacities shown in Appendices N and O are based on the assumptions that the Main tiles are both installed per their respective design and that they are functioning at full capacity (i.e. are not collapsed, broken, plugged, etc).
- The proposed and existing pipe sizes and capacities shown in Appendices N and O are those to serve the lands within the existing District boundaries and not any discharges from other lands outside the District boundaries.
- The stationing and distances shown in Appendices K and L are based on the original district profiles. There are additional lengths of tile downstream that will also be repaired.
- Improvements have historically been viewed as having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County

NRCS office to determine the existence of said jurisdictional wetlands and what said impact may be on them.

Per Iowa Code Chapter 468.126, the above actions would be considered an improvement. As such, Subsection 4, paragraph c of Chapter 468.126 states "If the estimated cost of the improvement does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing on whether to construct the proposed improvement and whether there shall be a reclassification of benefits for the cost of the proposed improvement." The opinion of probable construction cost contained in the next section of this report exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.4.e, the right of remonstrance may apply to the proposed improvements.

7.0 OPINION OF PROBABLE CONSTRUCTION COSTS – Using the above methods of repairs and improvements, an itemized list of project quantities and associated opinions of probable construction cost for each option were compiled and are included in Appendices P, Q, R, and S of this report. A summary of said costs are as follows:

| METHOD | DRAINAGE COEFF. | CONSTRUCTION COST |
|---|-----------------|-------------------|
| Dual Tile Replacement – Repair | Existing | \$464,456.25 |
| Single Tile Replacement – Repair | Existing | \$379,212.50 |
| Dual Tile Upsizing – Improvement (½") | ½" | \$565,512.50 |
| Dual Tile Upsizing – Improvement (1") | 1" | \$642,418.75 |
| Single Tile Upsizing – Improvement (½") | ½" | \$395,312.50 |
| Single Tile Upsizing – Improvement (1") | 1" | \$449,650.00 |

It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary repair and include applicable engineering, construction observation, and project administration fees by Clapsaddle-Garber Associates. However, said costs do not include any interest, legal fees, county administrative fees, crop damages, other damages, previous repairs, engineering fees to date, wetland mitigation fees, or reclassification fees (if applicable). As always, all costs shown are opinions of Clapsaddle-Garber Associates based on previous lettings on other projects. Said costs are just a guideline and are not a guarantee of actual costs.

8.0 OWNERSHIP AND CLASSIFICATIONS – Any and all information concerning ownership of lands and classifications of said lands within Drainage District No. 167 can be obtained from the Hardin County Auditor’s office.

It should be noted that Iowa Code Chapter 468.65 states “When, after a drainage . . . district has been established . . .” and “. . . a repair . . . has become necessary, the board may consider whether the existing assessments are equitable as a basis for payment of the expense of . . . making the repair . . .” and “If they find the same to be inequitable in any particular . . . they shall . . . order a reclassification . . .” Based on this, it is our opinion that a reclassification may be required if the repair were to move forward.

It should also be noted that Iowa Code Chapter 468.131 states “When an assessment for improvements . . . exceeds twenty-five percent of the original assessment and the original or subsequent assessment . . . did not designate separately the amount each tract should pay for the main ditch and tile lateral drains then the board shall order a reclassification . . .” Based on this, it appears that a reclassification separating laterals may be required if any of the above options were deemed to be an improvement, said improvement were to move forward, and the laterals had not already been separated. Since the proposed project does not involve the laterals, it is not clear if this portion of code is applicable and it is our recommendation that the District Trustees seek advice from their legal counsel.

9.0 RECOMMENDATIONS – There is a definite need to perform one of the above-mentioned actions. The repairs would remove the current restrictions and impediments to the Main tiles and extend the lifespan of the same. The improvement would do the same and increase the capacity of the Main tiles. Therefore, it is recommended that the Hardin County Board of Supervisors, acting as District Trustees, should take action to accomplish the following:

- Approve the Engineer’s Report as prepared by Clapsaddle-Garber Associates.
- Hold the required hearing on the proposed repairs or improvements.
- Adopt one of the recommendations of the Engineer’s Report.
- Direct plans and specifications for the proposed repairs or improvements be prepared by Clapsaddle-Garber Associates.
- Proceed with receiving bids from interested contractors by Clapsaddle-Garber Associates.
- Award contract to the lowest responsible contractor.
- If desired or required by Iowa Code, proceed with reclassification proceedings

**DRAINAGE DISTRICT 167
LANDOWNER MEETING**

7/25/2018 - Minutes

1. Open Meeting

Hardin County Board of Supervisors Co-Chairperson, Renee McClellan, opened the meeting. Also present was Supervisor, Lance Granzow; Landowners, Michael Martin, Neil Martin, Lydia Martin, Curt Groen, Dave Bernard, Jim Martin, Larry Balvanz, Ron Reece and Pauline Lloyd; Lee Gallentine with Clapsaddle-Garber Associates (CGA); Drainage Clerk, Tina Schlemme. Absent: Supervisor, BJ Hoffman.

2. Approve Agenda

Granzow moved, McClellan seconded to approve the agenda as presented. All ayes. Motion carried.

3. Attendance/Introductions

Introductions were made and attendance verified.

4. Explanation Of Project

The meeting was turned over to Gallentine who explained the repair summary. An investigation began when a landowner in the NE SE of Section 4-86-20 reported a blowout in the waterway with smaller ones upstream. It is evident that the tile is blocked and needs repaired. It is currently 6 to 8 inch tile but due to low soil cover, it is recommended that it be replaced with concrete pipe which comes in 12 inch pipe. Gallentine further stated that multiple repairs have been submitted over the past 20 years.

5. Comments/Discussion

Granzow asked the landowners if they would like to replace the main tile as is, replace both main tiles into one larger tile or just perform spot repairs. Neil Martin stated he had helped as a boy installing the original tile in the mid 1940's and believed the soil cover to be 4 feet. Gallentine added that the spot they checked the cover was only 1.5 to 2 feet of cover so erosion must have occurred. There was much discussion between land owners regarding replacing all of the tile moving forward. It was agreed that they would pay to have an engineer's report created to see the projected estimated costs with the different options to see how they would like to move forward. When asked if they would consider an open ditch option, Neil Martin stated he would like to keep the drainage underground. Gallentine added that they are busy with construction season right now, but he would hope to have a report completed by the end of the year.

6. Possible Action

Granzow moved, McClellan seconded for CGA to complete an engineer's report with both repair and improvement options and a hearing will be scheduled once submitted. It was discussed that the repair option should include a single line repair and both lines being replaced into one tile. All ayes. Motion carried.

7. Other Business

It was discussed that a reclassification may be considered once the engineer's report is submitted and a plan is approved.

8. Adjourn Meeting

Granzow moved, McClellan seconded to adjourn the meeting. All ayes. Motion carried.

Drainage District:

167

Investigation Summary:

Landowner in the NE¼ SE¼ of Section 4 Township 86 North, Range 20 West reported a blowout/sinkhole in waterway, with smaller depressions upstream (northwest) of said larger blowout/sinkhole. Visual observation found a 6 inch VCP tile 1½'± to 2'± deep (assumed to be south main tile). Water is exiting the tile through multiple holes upstream, flowing overland flow to the southeast through the waterway, and then entering back into the tile.

Contractor Time and Materials (spent while Ryken was on-site):

None as only visual observation performed.

Additional Actions Recommended:

Given the nature of the water flow, it is evident that a tile blockage exists within the area of investigation. Said blockage should be found, removed, and then both the blowout/sinkhole repaired. Also, the multiple holes upstream should be excavated and repaired as necessary. Due to the lack of soil cover, repairs would typically be performed with concrete pipe. However, concrete pipe is only available in 12 inch and larger diameter. Therefore, the repairs must either be performed with 6 inch dual wall HPDE tile or 12 inch concrete pipe.

Since this is the second work order in 2 years in this area, the District Trustees may wish investigate relocation or replacement of the district tile to provide for more soil cover, extended lifespan, and fewer repairs.





Drainage Work Order Request For Repair Hardin County

Date: 4/26/2018

Work Order #: WO00000208

Drainage District: Drainage Districts \DD 167

Sec-Twp-Rge: 04-86-20 Qtr Sec: NE SE

Location/GIS: 86-20-04-400-002

Requested By: Robert Jenson

Contact Phone: (641) 849-0341

Contact Email: _____

Landowner (if different): Neil Martin

Description: Blowout in lower end of waterway in NE SE 4-86-20 with "babies" northwest of it. The ground cover over the tile in this area is very shallow.

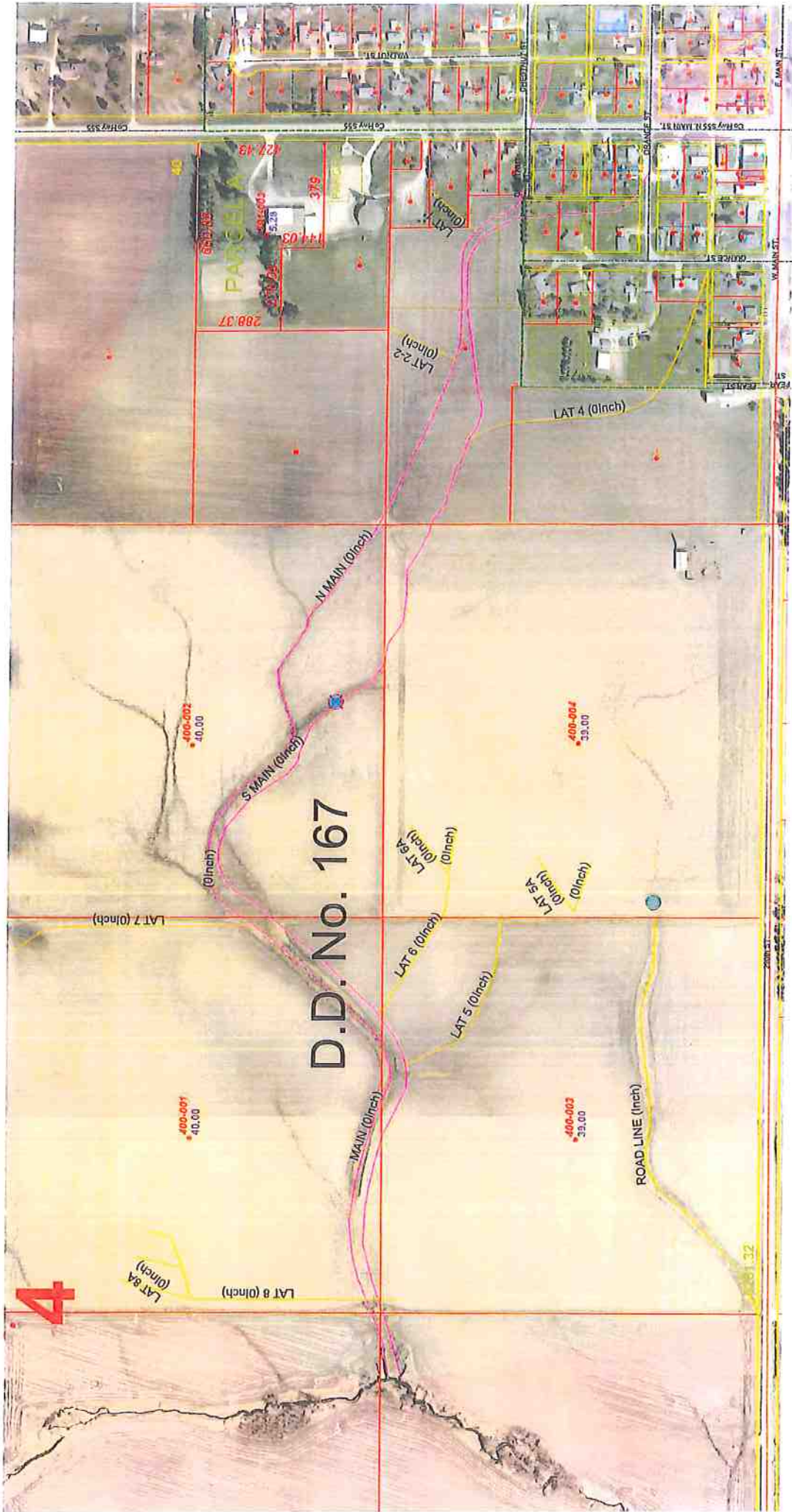
Repair labor, materials and equipment: _____

Repaired By: _____ Date: _____

Please reference work order # and send statement for services to:
Hardin County Auditor's Office
Attn: Drainage Clerk
1215 Edgington Ave, Suite 1
Eldora, IA 50627
Phone (641) 939-8111
Fax (641) 939-8245

For Office Use Only

Approved: _____ Date: _____



D.D. No. 167

PARCELA

4

LAT 8 (0inch)

LAT 8A (0inch)

LAT 7 (0inch)

MAIN (0inch)

LAT 6 (0inch)

LAT 6A (0inch)

LAT 5 (0inch)

LAT 5A (0inch)

LAT 4 (0inch)

LAT 2-2 (0inch)

288.37

613.03

427.13

376

144.03

5.23

28.6005

400-002

40.00

400-004

33.00

400-003

33.00

ROAD LINE (1inch)

288.32

2000 ST

W MAIN ST

ORANGE ST

GRACE ST

W MAIN ST

OSWAYO ST

OSWAYO ST

OSWAYO ST

OSWAYO ST

OSWAYO ST

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CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

5/11/18

PROJECT NUMBER:

6954-1

DAYS OF WEEK:

S | M | T | W | T | **F** | S

COUNTY, ROUTE, ROAD:

DD 167

SHEET NO.

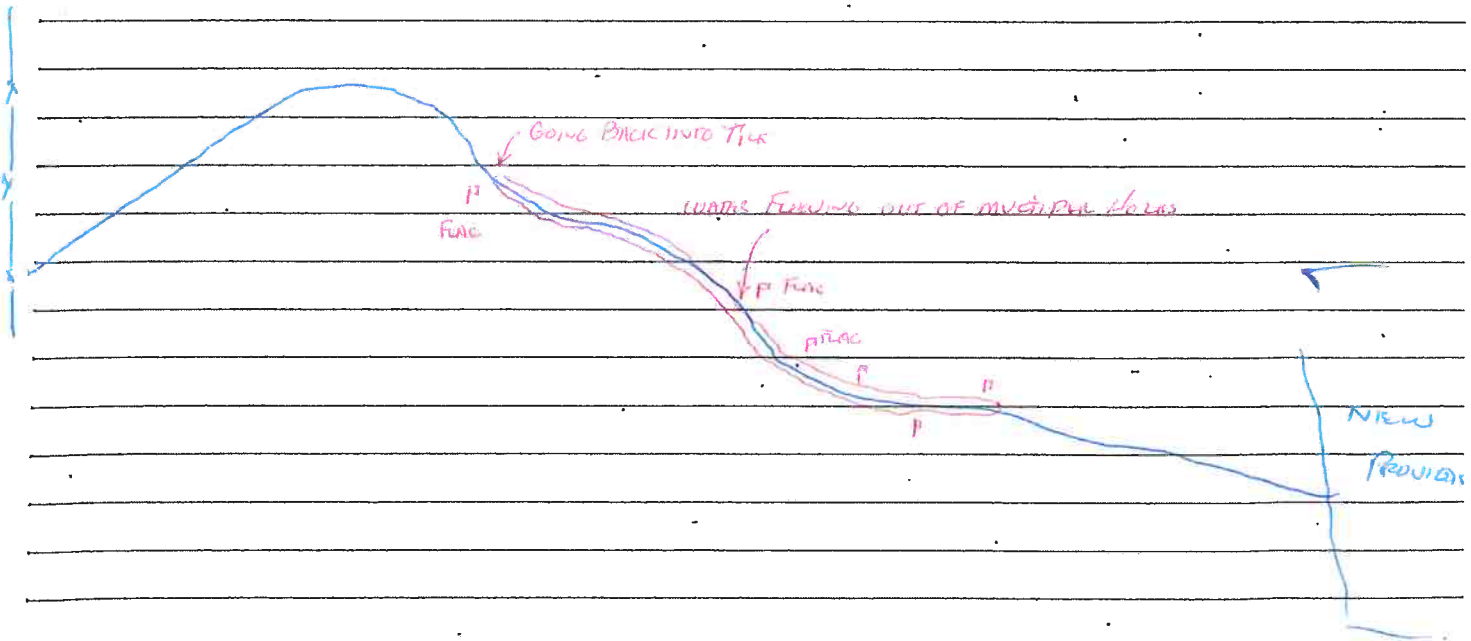
OF

LOCATION:

New Providence, West

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SU NAME, ITEM NO. AND LOCATION

Partly Sunny, 65°, Windy From East, Rain Earlier
Arrived @ Job Site 9:00 AM, Called and Talked to Robert Jensen,
He met me and drove his pickup out to Blow-outs Found 6" clay tile
1 1/2 - 2' deep, Blowing out water in multiple places (6 or more) All look to
be joints, must have a collapse down stream causing water to surge up thru
butt joints and then go back into tile past the collapse or blockage.
This looks to be the S. main
Find and fix blockage ASAP, the rest of tile should be OK.
Talked to Robert about shifting swale or tile route to get more cover.
This will be a on going problem with the minimum cover this butt joint tile
has.



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

[Handwritten Signature]

Date Prepared:

5/11/18

Reviewed by:

Engineer

Date Reviewed

Looking NW @ Blodgett House, 2' cover

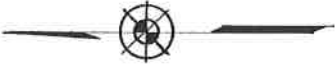




Providence Mutual Title
 District NO. 167
 SEC. 1 WP 88N-R20W
 SW/4 Sec. 3-1 WP 88N-R20W
 FEB 29 1949 Scale: 1" = 200'

NS 167

TRACED FROM ORIGINAL BY
 RYKEN ENGR CO 1/10/73



Tile Replacement

Providence Mutual Tile
 District NO. 167
 SET Sec 4, TP 88N-R20W
 S1/4 Sec 3, T1, W 88N-R20W
 FEB 20 1949 Scale: 1" = 200'

NE 167

TRACED FROM ORIGINAL BY
 RYKEN ENGR CO 1/10/73



Engineer's Opinion of North Main tile Capacities
 Project: North Dual Tile Replacement for D.D. #167
 Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

| | | EXISTING | | | | REPAIRED | | | |
|--------|---|--------------------------|-------------------------------|----------------------------------|---|-------------------------|------------------------------|---------------------------------|--|
| STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | REPAIRED TILE SIZE (in) | REPAIRED TILE CAPACITY (cfs) | REPAIRED TILE CAPACITY (in/day) | |
| 0+00N | Start of Profile | 8 | 0.94 | 0.27 | Start of Profile | 8 | 0.94 | 0.27 | |
| 3+00N | Grade change from 0.60% to 2.50% | 8 | 1.92 | 0.56 | Grade change from 0.60% to 2.50% | 8 | 1.92 | 0.56 | |
| 5+00N | Grade change from 2.50% to 0.80% | 8 | 1.08 | 0.38 | Grade change from 2.50% to 0.80% | 8 | 1.08 | 0.38 | |
| 14+00N | Grade change from 0.80% to 1.10% | 8 | 1.27 | 0.45 | Grade change from 0.80% to 1.10% | 8 | 1.27 | 0.45 | |
| 30+00N | Grade change from 1.10% to 0.50% | 8 | 0.86 | 0.84 | Grade change from 1.10% to 0.50% | 8 | 0.86 | 0.84 | |
| 35+00N | Grade change from 0.50% to 2.10% | 8 | 1.76 | 2.93 | Grade change from 0.50% to 2.10% | 8 | 1.76 | 2.93 | |
| 40+16N | End of repair (i.e. north side of New Providence) | 8 | 1.76 | 4.51 | End of repair (i.e. north side of New Providence) | 8 | 1.76 | 4.51 | |
| 47+00N | End of North Main tile | 8 | | | End of North Main tile | 8 | | | |

NORTH DUAL TILE REPLACEMENT (REPAIR)



Engineer's Opinion of South Main tile Capacities
Project: South Dual Tile Replacement for D.D. #167
Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

| | | EXISTING | | | | REPAIRED | | | |
|--------|--|--------------------------|-------------------------------|----------------------------------|--|-------------------------|------------------------------|---------------------------------|--|
| STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | REPAIRED TILE SIZE (in) | REPAIRED TILE CAPACITY (cfs) | REPAIRED TILE CAPACITY (in/day) | |
| 0+00S | Start of Profile | 8 | 1.15 | 0.58 | Start of Profile | 8 | 1.15 | 0.58 | |
| 15+00S | Grade change from 0.90% to 0.56% | 8 | 0.91 | 0.72 | Grade change from 0.90% to 0.56% | 8 | 0.91 | 0.72 | |
| 20+00S | Grade change from 0.56% to 2.34% | 8 | 1.85 | 4.63 | Grade change from 0.56% to 2.34% | 8 | 1.85 | 4.63 | |
| 25+20S | End of repair (i.e., north side of New Providence) | 8 | 1.85 | 5.26 | End of repair (i.e., north side of New Providence) | 8 | 1.85 | 5.26 | |
| 33+95S | End of South Main tile | 8 | | | End of South Main tile | 8 | | | |

SOUTH DUAL TILE REPLACEMENT (REPAIR)



Engineer's Opinion of Single Main tile Capacities
 Project: Single Tile Replacement for D.D. #167
 Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

| | | EXISTING | | | | REPAIRED | | | |
|--------|---|--------------------------|-------------------------------|----------------------------------|---|-------------------------|------------------------------|---------------------------------|--|
| STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | REPAIRED TILE SIZE (in) | REPAIRED TILE CAPACITY (cfs) | REPAIRED TILE CAPACITY (in/day) | |
| 0+00N | Start of Profile | (2) x 8 | 1.88 | 0.29 | Start of Profile | 12 | 2.77 | 0.43 | |
| 3+00N | Grade change from 0.60% to 2.50% | (2) x 8 | 3.83 | 0.60 | Grade change from 0.60% to 2.50% | 12 | 5.65 | 0.89 | |
| 5+00N | Grade change from 2.50% to 0.80% | (2) x 8 | 2.17 | 0.40 | Grade change from 2.50% to 0.80% | 12 | 3.20 | 0.59 | |
| 14+00N | Grade change from 0.80% to 1.10% | (2) x 8 | 2.54 | 0.53 | Grade change from 0.80% to 1.10% | 12 | 3.75 | 0.78 | |
| 30+00N | Grade change from 1.10% to 0.50% | (2) x 8 | 1.76 | 0.77 | Grade change from 1.10% to 0.50% | 12 | 2.53 | 1.11 | |
| 35+00N | Grade change from 0.50% to 2.10% | (2) x 8 | 3.61 | 3.61 | Grade change from 0.50% to 2.10% | 12 | 5.18 | 5.18 | |
| 40+16N | End of repair (i.e. north side of New Providence) | (2) x 8 | 3.61 | 4.86 | End of repair (i.e. north side of New Providence) | 12 | 5.18 | 6.98 | |
| 47+00N | End of North Main tile | (2) x 8 | | | End of North Main tile | | | | |

SINGLE TILE REPLACEMENT (REPAIR)



Providence Mutual Tile
 District NO. 167
 SE 1/4 Sec 37, Twp 88N, R20W
 SW 1/4 Sec 37, Twp 88N, R20W
 FEB 20 1948 Scale: 1" = 200'

NE 167

TRACED FROM ORIGINAL BY
 RYKEN ENGR CO 1/10/73



By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

Engineer's Opinion of North Main tile Capacities

Project: North Dual Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| NORTH DUAL TILE UPSIZING (IMPROVEMENT) | EXISTING | | | | | IMPROVED | | | | | | |
|--|----------|---|--------------------------------|--|---|---|-------------------------------|---------------------------------------|--|-------------------------------|---------------------------------------|--|
| | STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | 1/2" DRAINAGE COEFFICIENT | | | 1" DRAINAGE COEFFICIENT | | |
| | | | | | | | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) |
| | 0+00N | Start of Profile | 8 | 0.94 | 0.27 | Start of Profile | 12 | 2.77 | 0.81 | 15 | 5.02 | 1.46 |
| | 3+00N | Grade change from 0.60% to 2.50% | 8 | 1.92 | 0.56 | Grade change from 0.60% to 2.50% | 10 | 3.47 | 1.02 | 12 | 5.65 | 1.65 |
| | 5+00N | Grade change from 2.50% to 0.80% | 8 | 1.08 | 0.38 | Grade change from 2.50% to 0.80% | 10 | 1.96 | 0.69 | 12 | 3.20 | 1.11 |
| | 14+00N | Grade change from 0.80% to 1.10% | 8 | 1.27 | 0.45 | Grade change from 0.80% to 1.10% | 10 | 2.30 | 0.82 | 12 | 3.75 | 1.33 |
| | 30+00N | Grade change from 1.10% to 0.50% | 8 | 0.86 | 0.84 | Grade change from 1.10% to 0.50% | 8 | 0.86 | 0.84 | 10 | 1.55 | 1.52 |
| | 35+00N | Grade change from 0.50% to 2.10% | 8 | 1.76 | 2.93 | Grade change from 0.50% to 2.10% | 8 | 1.76 | 2.93 | 8 | 1.76 | 2.93 |
| | 40+16N | End of repair (i.e. north side of New Providence) | 8 | 1.76 | 4.51 | End of repair (i.e. north side of New Providence) | 8 | 1.76 | 4.51 | 8 | 1.76 | 4.51 |
| | 47+00N | End of North Main tile | 8 | | | End of North Main tile | | | | | | |



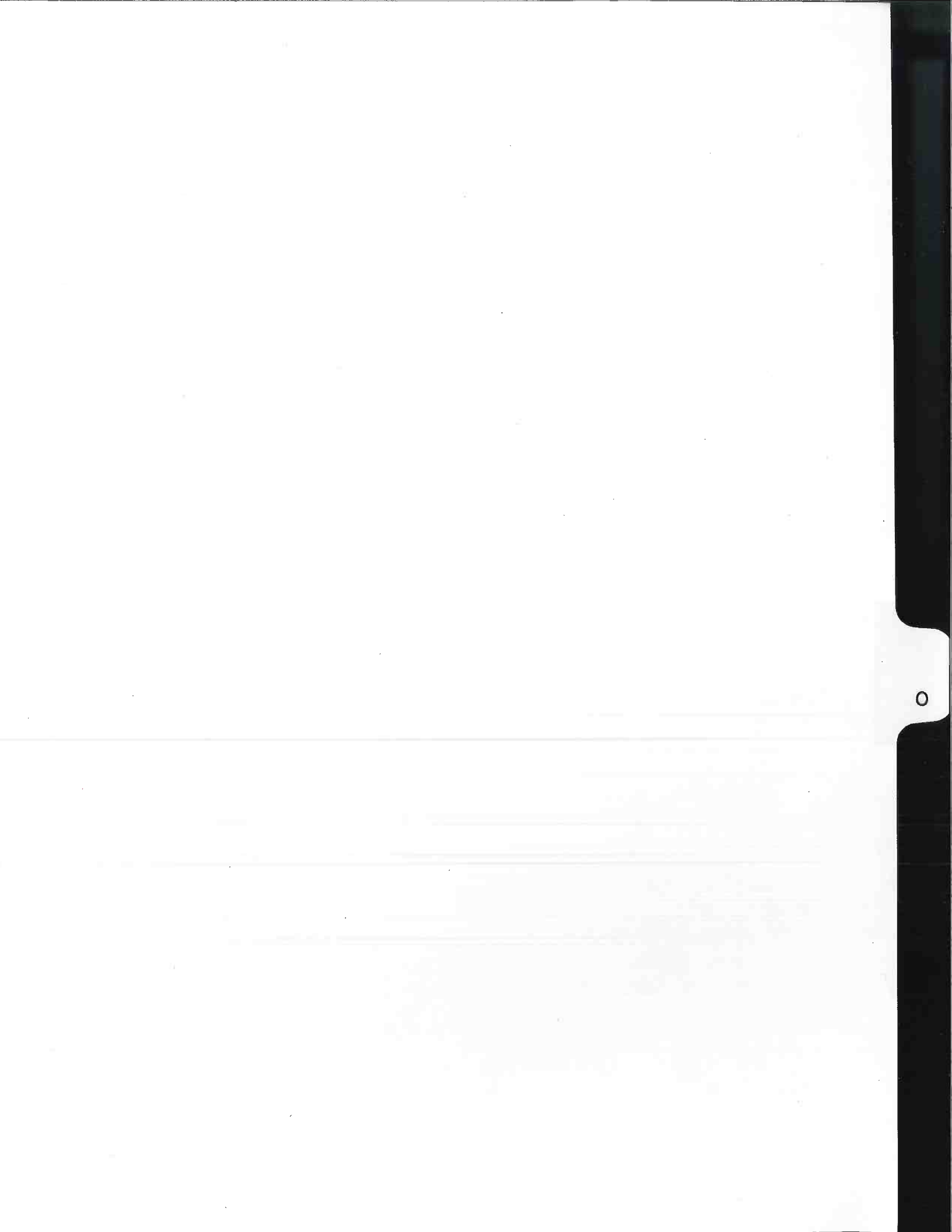
By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

Engineer's Opinion of South Main tile Capacities

Project: South Dual Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| SOUTH DUAL TILE UPSIZING (IMPROVEMENT) | EXISTING | | | | | IMPROVED | | | | | | |
|--|---|----------------------|--------------------------------|--|---|----------------------|-------------------------------|---------------------------------------|--|-------------------------------|---------------------------------------|--|
| | STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | 1/2" DRAINAGE COEFFICIENT | | | 1" DRAINAGE COEFFICIENT | | |
| | | | | | | | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) |
| 0+00S | Start of Profile | 8 | 1.15 | 0.58 | Start of Profile | 8 | 1.15 | 0.58 | 10 | 2.08 | 1.05 | |
| 15+00S | Grade change from 0.90% to 0.56% | 8 | 0.91 | 0.72 | Grade change from 0.90% to 0.56% | 8 | 0.91 | 0.72 | 10 | 1.64 | 1.31 | |
| 20+00S | Grade change from 0.56% to 2.34% | 8 | 1.85 | 4.63 | Grade change from 0.56% to 2.34% | 8 | 1.85 | 4.63 | 8 | 1.85 | 4.63 | |
| 25+20S | End of repair (i.e. north side of New Providence) | 8 | 1.85 | 5.26 | End of repair (i.e. north side of New Providence) | 8 | 1.85 | 5.26 | 8 | 1.85 | 5.26 | |
| 33+95S | End of South Main tile | 8 | | | End of South Main tile | | | | | | | |





By: J.V.S.
 Date: 12/17/2018
 Checked By: L.O.G.
 Date: 12/27/2018

Engineer's Opinion of Single Main tile Capacities

Project: Single Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| SINGLE TILE UPSIZING (IMPROVEMENT) | EXISTING | | | | | IMPROVED | | | | | | |
|---------------------------------------|----------|---|--------------------------------|--|---|---|-------------------------------|---------------------------------------|--|-------------------------------|---------------------------------------|--|
| | STA | EXISTING DESCRIPTION | INSTALLED TILE SIZE (in) | INSTALLED TILE CAPACITY (cfs) | INSTALLED TILE CAPACITY (in/day) | PROPOSED DESCRIPTION | 1/2" DRAINAGE COEFFICIENT | | | 1" DRAINAGE COEFFICIENT | | |
| | | | | | | | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) | IMPROVED TILE SIZE (in) | IMPROVED TILE CAPACITY (cfs) | IMPROVED TILE CAPACITY (in/day) |
| | 0+00N | Start of Profile | (2) x 8 | 1.88 | 0.29 | End of historical records | 15 | 5.02 | 0.78 | 18 | 8.16 | 1.27 |
| | 3+00N | Grade change from 0.60% to 2.50% | (2) x 8 | 3.83 | 0.60 | Grade change from 0.60% to 2.50% | 12 | 5.65 | 0.89 | 15 | 10.24 | 1.61 |
| | 5+00N | Grade change from 2.50% to 0.80% | (2) x 8 | 2.17 | 0.40 | Grade change from 2.50% to 0.80% | 12 | 3.20 | 0.59 | 15 | 5.79 | 1.06 |
| | 14+00N | Grade change from 0.80% to 1.10% | (2) x 8 | 2.54 | 0.53 | Grade change from 0.80% to 1.10% | 12 | 3.75 | 0.75 | 15 | 6.79 | 1.41 |
| | 30+00N | Grade change from 1.10% to 0.50% | (2) x 8 | 1.76 | 0.77 | Grade change from 1.10% to 0.50% | 10 | 1.55 | 0.68 | 12 | 2.53 | 1.11 |
| | 35+00N | Grade change from 0.50% to 2.10% | (2) x 8 | 3.61 | 3.61 | Grade change from 0.50% to 2.10% | 12 | 5.18 | 5.18 | 12 | 5.18 | 5.18 |
| | 40+16N | End of repair (i.e. north side of New Providence) | (2) x 8 | 3.61 | 4.86 | End of repair (i.e. north side of New Providence) | 12 | 5.18 | 6.98 | 12 | 5.18 | 6.98 |
| | 47+00N | End of North Main tile | (2) x 8 | | | End of North Main tile | | | | | | |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Dual Tile Replacement for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| DUAL TILE REPLACEMENT (REPAIR) | ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost | |
|--------------------------------|------------------------------------|----------------------------------|-------------|-------|----------|--------------|---------------|--|
| | DISTRICT CONSTRUCTION COSTS | | | | | | | |
| | 1 | 10" DUAL WALL HDPE TILE | \$ 30.00 | LF | 600 | LF | \$ 18,000.00 | |
| | 2 | 8" DUAL WALL HDPE TILE | \$ 25.00 | LF | 8800 | LF | \$ 220,000.00 | |
| | 3 | 40' x 10" CMP TILE W/ FLARED END | \$ 2,400.00 | EA | 1 | EA | \$ 2,400.00 | |
| | 4 | 40' x 8" CMP TILE W/ FLARED END | \$ 2,200.00 | EA | 1 | EA | \$ 2,200.00 | |
| | 5 | 10" X 8" DUAL WALL HDPE REDUCER | \$ 400.00 | EA | 1 | EA | \$ 400.00 | |
| | 6 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 100 | TON | \$ 5,000.00 | |
| | 7 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 | |
| | 8 | CONCRETE COLLAR | \$ 500.00 | EA | 4 | EA | \$ 2,000.00 | |
| | 9 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 | |
| | 10 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 | |
| 11 | TILE REMOVAL | \$ 5.00 | LF | 9400 | LF | \$ 47,000.00 | | |
| | | CONSTRUCTION SUBTOTAL | | | | | \$ 323,100.00 | |
| | | Contingency (15%) | | | | | \$ 48,465.00 | |
| | | CONSTRUCTION TOTAL | | | | | \$ 371,565.00 | |
| | | Engr. & Const. Observation (25%) | | | | | \$ 92,891.25 | |
| | | TOTAL COST | | | | | \$ 464,456.25 | |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Single Tile Replacement for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| SINGLE TILE REPLACEMENT (REPAIR) | ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost | |
|-------------------------------------|------------------------------------|----------------------------------|-------------|-------|----------|--------------|---------------|--|
| | DISTRICT CONSTRUCTION COSTS | | | | | | | |
| | 101 | 12" DUAL WALL PPE or RCP TILE | \$ 35.00 | LF | 4700 | LF | \$ 164,500.00 | |
| | 102 | 40' x 12" CMP TILE W/ FLARED END | \$ 2,400.00 | EA | 1 | EA | \$ 2,400.00 | |
| | 103 | JUNCTION STRUCTURE | \$ 1,000.00 | EA | 1 | EA | \$ 1,000.00 | |
| | 104 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 50 | TON | \$ 2,500.00 | |
| | 105 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 | |
| | 106 | CONCRETE COLLAR | \$ 500.00 | EA | 3 | EA | \$ 1,500.00 | |
| | 107 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 | |
| | 108 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 | |
| 109 | TILE REMOVAL | \$ 7.00 | LF | 9400 | LF | \$ 65,800.00 | | |
| | | CONSTRUCTION SUBTOTAL | | | | | \$ 263,800.00 | |
| | | Contingency (15%) | | | | | \$ 39,570.00 | |
| | | CONSTRUCTION TOTAL | | | | | \$ 303,370.00 | |
| | | Engr. & Const. Observation (25%) | | | | | \$ 75,842.50 | |
| | | TOTAL COST | | | | | \$ 379,212.50 | |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Dual Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

DUAL TILE UPSIZING (1/2" IMPROVEMENT)

| ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost |
|------------------------------------|----------------------------------|-------------|-------|----------|-------|---------------|
| DISTRICT CONSTRUCTION COSTS | | | | | | |
| 201 | 12" DUAL WALL PPE or RCP TILE | \$ 35.00 | LF | 1970 | LF | \$ 68,950.00 |
| 202 | 10" DUAL WALL HDPE TILE | \$ 30.00 | LF | 3900 | LF | \$ 117,000.00 |
| 203 | 8" DUAL WALL HDPE TILE | \$ 25.00 | LF | 3530 | LF | \$ 88,250.00 |
| 204 | 40' x 12" CMP TILE W/ FLARED END | \$ 2,400.00 | EA | 2 | EA | \$ 4,800.00 |
| 205 | 12" X 10" DUAL WALL HDPE REDUCER | \$ 400.00 | EA | 2 | EA | \$ 800.00 |
| 206 | 10" X 8" DUAL WALL HDPE REDUCER | \$ 400.00 | EA | 2 | EA | \$ 800.00 |
| 207 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 100 | TON | \$ 5,000.00 |
| 208 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 |
| 209 | CONCRETE COLLAR | \$ 600.00 | EA | 4 | EA | \$ 2,400.00 |
| 210 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 |
| 211 | INTERCONNECTION STRUCTURES | \$ 1,500.00 | EA | 9 | EA | \$ 13,500.00 |
| 212 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 |
| 213 | TILE REMOVAL | \$ 7.00 | LF | 9400 | LF | \$ 65,800.00 |
| CONSTRUCTION SUBTOTAL | | | | | | \$ 393,400.00 |
| Contingency (15%) | | | | | | \$ 59,010.00 |
| CONSTRUCTION TOTAL | | | | | | \$ 452,410.00 |
| Engr. & Const. Observation (25%) | | | | | | \$ 113,102.50 |
| TOTAL COST | | | | | | \$ 565,512.50 |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Dual Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| DUAL TILE UPSIZING (1" IMPROVEMENT) | ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost | |
|-------------------------------------|------------------------------------|---|-------------|-------|----------|--------------|---------------|--|
| | DISTRICT CONSTRUCTION COSTS | | | | | | | |
| | 301 | 15" DUAL WALL PPE OR RCP TILE | \$ 45.00 | LF | 1970 | LF | \$ 88,650.00 | |
| | 302 | 12" DUAL WALL PPE OR RCP TILE | \$ 35.00 | LF | 3900 | LF | \$ 136,500.00 | |
| | 303 | 10" DUAL WALL HDPE TILE | \$ 30.00 | LF | 2500 | LF | \$ 75,000.00 | |
| | 304 | 8" DUAL WALL HDPE TILE | \$ 25.00 | LF | 1030 | LF | \$ 25,750.00 | |
| | 305 | 40' x 15" CMP TILE W/ FLARED END | \$ 2,800.00 | EA | 2 | EA | \$ 5,600.00 | |
| | 304 | 15" X 12" DUAL WALL PPE OR CONCRETE REDUCER | \$ 500.00 | EA | 2 | EA | \$ 1,000.00 | |
| | 305 | 12" X 10" DUAL WALL HDPE REDUCER | \$ 400.00 | EA | 2 | EA | \$ 800.00 | |
| | 306 | 10" X 8" DUAL WALL HDPE REDUCER | \$ 400.00 | EA | 2 | EA | \$ 800.00 | |
| | 307 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 100 | TON | \$ 5,000.00 | |
| | 308 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 | |
| | 309 | CONCRETE COLLAR | \$ 600.00 | EA | 4 | EA | \$ 2,400.00 | |
| 310 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 | | |
| 311 | PRESSURE EQUILIZER | \$ 1,500.00 | EA | 9 | EA | \$ 13,500.00 | | |
| 312 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 | | |
| 313 | TILE REMOVAL | \$ 7.00 | LF | 9400 | LF | \$ 65,800.00 | | |
| CONSTRUCTION SUBTOTAL | | | | | | | \$ 446,900.00 | |
| Contingency (15%) | | | | | | | \$ 67,035.00 | |
| CONSTRUCTION TOTAL | | | | | | | \$ 513,935.00 | |
| Engr. & Const. Observation (25%) | | | | | | | \$ 128,483.75 | |
| TOTAL COST | | | | | | | \$ 642,418.75 | |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Single Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| SINGLE TILE UPSIZING (1/2" IMPROVEMENT) | ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost | |
|---|------------------------------------|---|-------------|-------|----------|--------------|---------------|--|
| | DISTRICT CONSTRUCTION COSTS | | | | | | | |
| | 401 | 15" DUAL WALL PPE OR RCP TILE | \$ 45.00 | LF | 1000 | LF | \$ 45,000.00 | |
| | 402 | 12" DUAL WALL PPE OR RCP TILE | \$ 35.00 | LF | 3700 | LF | \$ 129,500.00 | |
| | 403 | 40' x 15" CMP TILE W/ FLARED END | \$ 2,800.00 | EA | 1 | EA | \$ 2,800.00 | |
| | 404 | JUNCTION STRUCTURE | \$ 1,000.00 | EA | 1 | EA | \$ 1,000.00 | |
| | 405 | 15" X 12" DUAL WALL PPE OR CONCRETE REDUCER | \$ 500.00 | EA | 1 | EA | \$ 500.00 | |
| | 406 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 50 | TON | \$ 2,500.00 | |
| | 407 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 | |
| | 408 | CONCRETE COLLAR | \$ 600.00 | EA | 3 | EA | \$ 1,800.00 | |
| | 409 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 | |
| | 410 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 | |
| 411 | TILE REMOVAL | \$ 7.00 | LF | 9400 | LF | \$ 65,800.00 | | |
| | | CONSTRUCTION SUBTOTAL | | | | | \$ 275,000.00 | |
| | | Contingency (15%) | | | | | \$ 41,250.00 | |
| | | CONSTRUCTION TOTAL | | | | | \$ 316,250.00 | |
| | | Engr. & Const. Observation (25%) | | | | | \$ 79,062.50 | |
| | | TOTAL COST | | | | | \$ 395,312.50 | |



By: J.V.S.

Date: 12/20/2018

Checked By: L.O.G.

Date: 12/27/2018

Engineer's Opinion of Probable Construction Cost

Project: Single Tile Upsizing for D.D. #167

Location: Sections 3 & 4 T86N, R20W Hardin County, Iowa

| SINGLE TILE UPSIZING (1" IMPROVEMENT) | ITEM # | DESCRIPTION | Unit Cost | Units | Quantity | Units | Total Cost | |
|---------------------------------------|------------------------------------|---|-------------|-------|----------|--------------|---------------|--|
| | DISTRICT CONSTRUCTION COSTS | | | | | | | |
| | 501 | 18" DUAL WALL PPE OR RCP TILE | \$ 55.00 | LF | 1000 | LF | \$ 55,000.00 | |
| | 502 | 15" DUAL WALL PPE OR RCP TILE | \$ 45.00 | LF | 2700 | LF | \$ 121,500.00 | |
| | 503 | 12" DUAL WALL HDPE TILE | \$ 35.00 | LF | 1000 | LF | \$ 35,000.00 | |
| | 504 | JUNCTION STRUCTURE | \$ 1,000.00 | EA | 1 | EA | \$ 1,000.00 | |
| | 504 | 40' x 18" CMP TILE W/ FLARED END | \$ 3,000.00 | EA | 1 | EA | \$ 3,000.00 | |
| | 505 | 18" X 15" DUAL WALL PPE OR CONCRETE REDUCER | \$ 600.00 | EA | 1 | EA | \$ 600.00 | |
| | 506 | 15" X 12" DUAL WALL PPE OR CONCRETE REDUCER | \$ 500.00 | EA | 1 | EA | \$ 500.00 | |
| | 507 | OUTLET BANK STABILIZATION | \$ 50.00 | TON | 50 | TON | \$ 2,500.00 | |
| | 508 | LATERAL CONNECTIONS | \$ 1,000.00 | EA | 7 | EA | \$ 7,000.00 | |
| | 509 | CONCRETE COLLAR | \$ 600.00 | EA | 3 | EA | \$ 1,800.00 | |
| | 510 | PRIVATE TILE CONNECTIONS | \$ 500.00 | EA | 10 | EA | \$ 5,000.00 | |
| 511 | TILE LOCATION | \$ 150.00 | STA | 94 | STA | \$ 14,100.00 | | |
| 512 | TILE REMOVAL | \$ 7.00 | LF | 9400 | LF | \$ 65,800.00 | | |
| | | CONSTRUCTION SUBTOTAL | | | | | \$ 312,800.00 | |
| | | Contingency (15%) | | | | | \$ 46,920.00 | |
| | | CONSTRUCTION TOTAL | | | | | \$ 359,720.00 | |
| | | Engr. & Const. Observation (25%) | | | | | \$ 89,930.00 | |
| | | TOTAL COST | | | | | \$ 449,650.00 | |